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Accreditation No.: **SCS 108**

Client **Eurofins**

Certificate No: **D900V2-164_Sep12**

CALIBRATION CERTIFICATE

Object **D900V2 - SN: 164**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **September 24, 2012**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by: **Israe El-Naouq** Name **Israe El-Naouq** Function **Laboratory Technician**

Approved by: **Katja Pokovic** Name **Katja Pokovic** Function **Technical Manager**

Signature

Israe El-Naouq
Katja Pokovic

Issued: September 24, 2012

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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.3 $\pm$ 6 %	0.96 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.64 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	10.6 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.70 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.81 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.0	1.05 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.7 $\pm$ 6 %	1.06 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.76 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	10.9 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.77 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	7.00 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω - 8.0 j Ω
Return Loss	- 22.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω - 8.5 j Ω
Return Loss	- 20.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.407 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 16, 2002

DASY5 Validation Report for Head TSL

Date: 24.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 164

Communication System: CW; Frequency: 900 MHz

Medium parameters used: $f = 900$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.97, 5.97, 5.97); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

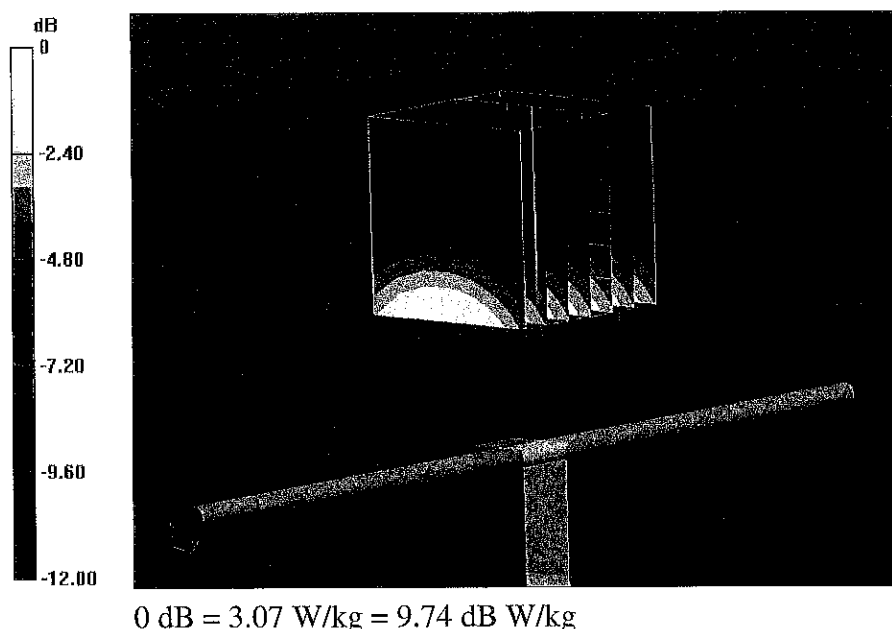
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.279 V/m; Power Drift = 0.03 dB

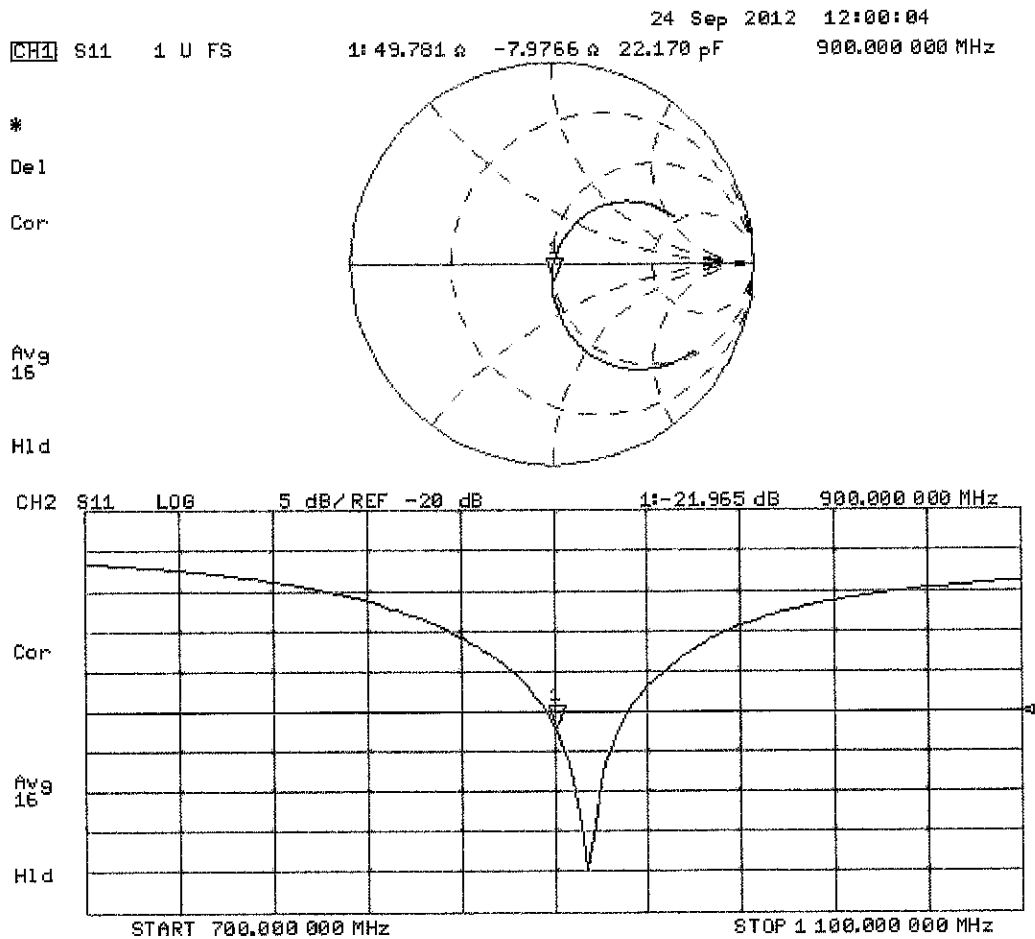
Peak SAR (extrapolated) = 3.960 mW/g

SAR(1 g) = 2.64 mW/g; SAR(10 g) = 1.7 mW/g

Maximum value of SAR (measured) = 3.07 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 24.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 164

Communication System: CW; Frequency: 900 MHz

Medium parameters used: $f = 900$ MHz; $\sigma = 1.06$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.94, 5.94, 5.94); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

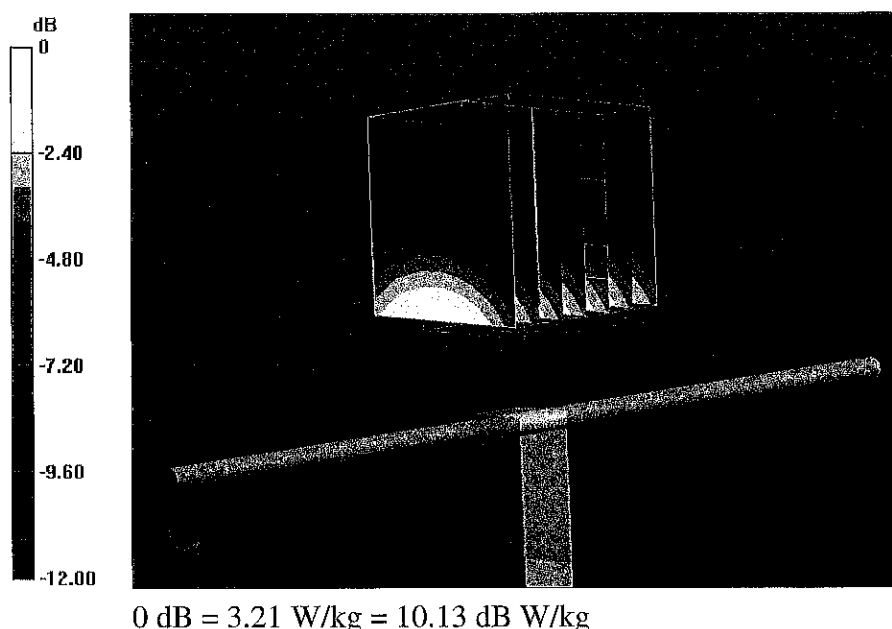
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.279 V/m; Power Drift = 0.03 dB

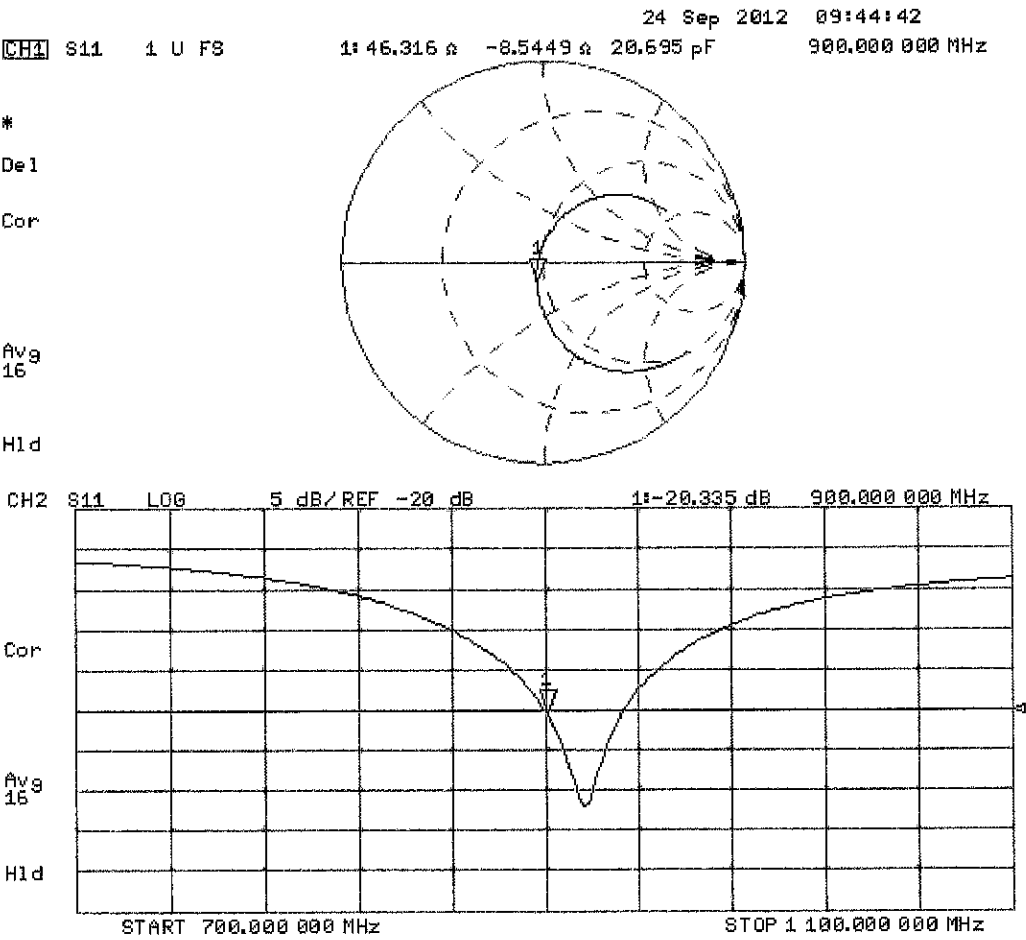
Peak SAR (extrapolated) = 4.229 mW/g

SAR(1 g) = 2.76 mW/g; SAR(10 g) = 1.77 mW/g

Maximum value of SAR (measured) = 3.21 W/kg



Impedance Measurement Plot for Body TSL





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Accreditation No.: **SCS 108**

Client **Eurofins**

Certificate No: **D1800V2-2d046_Sep12**

CALIBRATION CERTIFICATE

Object **D1800V2 - SN: 2d046**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **September 24, 2012**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by: **Israe El-Naouq** **Function**
Laboratory Technician

Approved by: **Katja Pokovic** **Technical Manager**

Signature

Israe El-Naouq

Katja Pokovic

Issued: September 25, 2012

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Accreditation No.: **SCS 108**

Glossary:

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ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.7 $\pm$ 6 %	1.39 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.23 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	37.0 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.89 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.6 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.7 $\pm$ 6 %	1.53 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.75 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	38.6 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.17 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.5 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.8 Ω - 3.4 j Ω
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.9 Ω - 2.8 j Ω
Return Loss	- 24.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.210 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 28, 2003

DASY5 Validation Report for Head TSL

Date: 20.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d046

Communication System: CW; Frequency: 1800 MHz

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.07, 5.07, 5.07); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

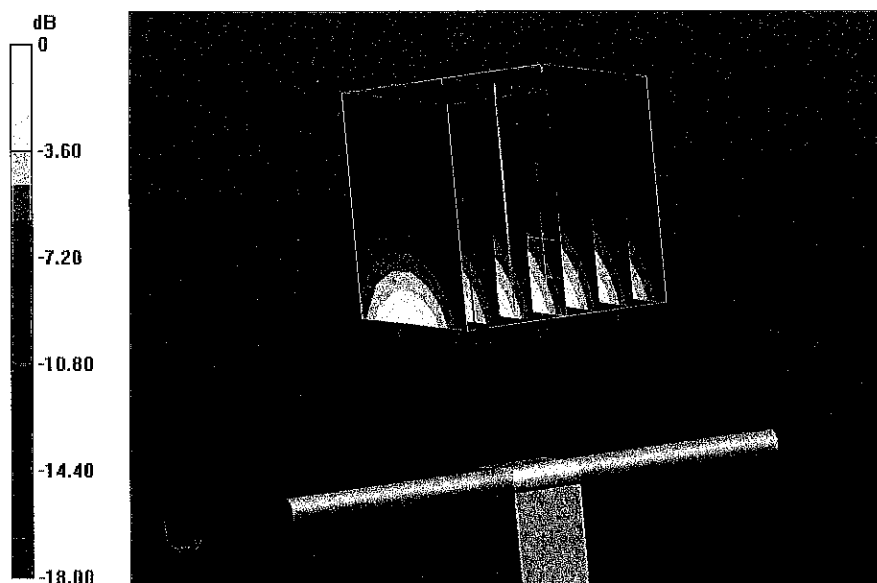
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.360 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 16.297 mW/g

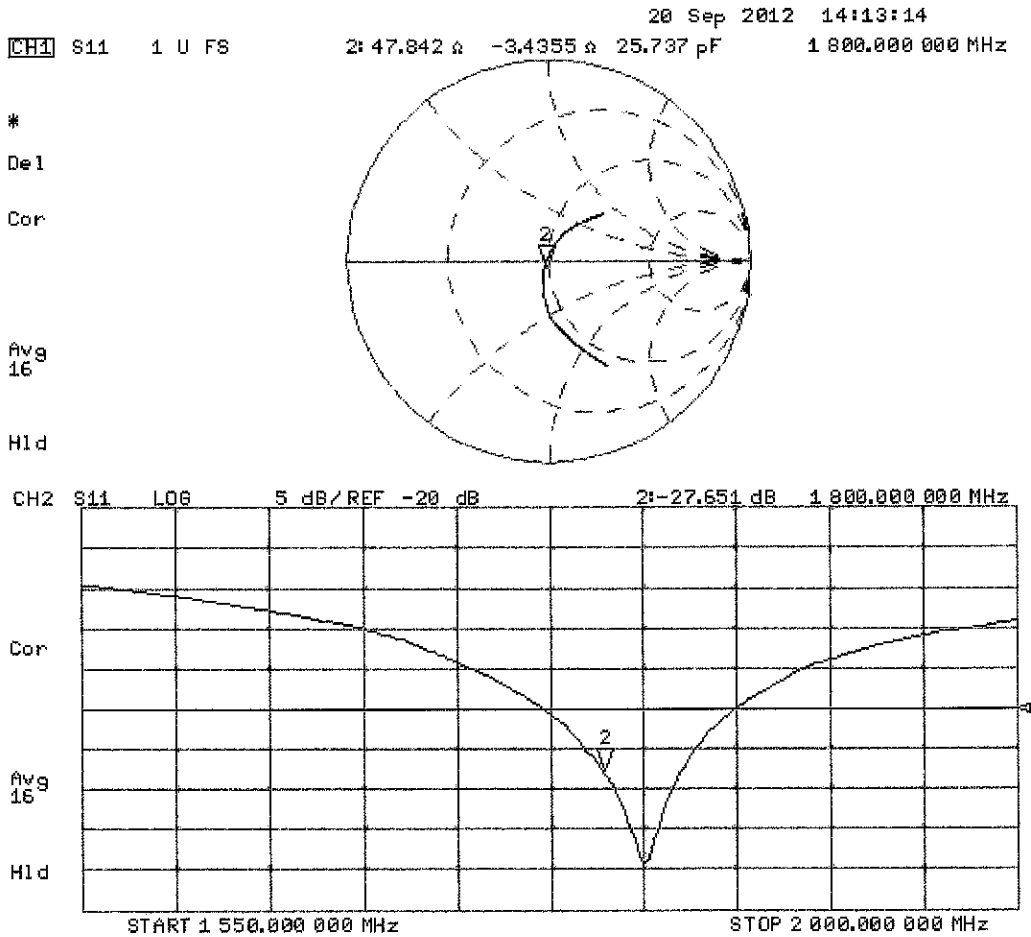
SAR(1 g) = 9.23 mW/g; SAR(10 g) = 4.89 mW/g

Maximum value of SAR (measured) = 11.3 W/kg



0 dB = 11.3 W/kg = 21.06 dB W/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 24.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 2d046

Communication System: CW; Frequency: 1800 MHz

Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.74, 4.74, 4.74); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/ $P_{in}=250 \text{ mW}$, $d=10\text{mm}$ /Zoom Scan (7x7x7)/Cube 0:

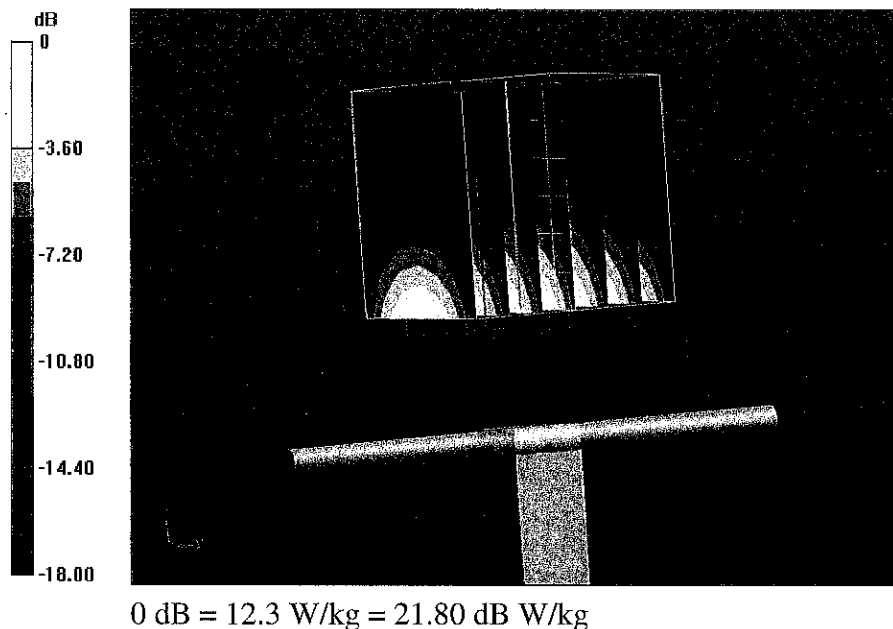
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 94.360 V/m ; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 17.202 mW/g

SAR(1 g) = 9.75 mW/g ; SAR(10 g) = 5.17 mW/g

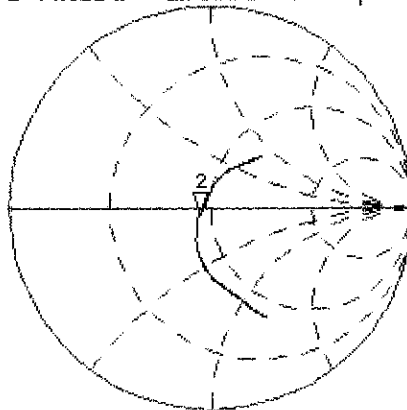
Maximum value of SAR (measured) = 12.3 W/kg



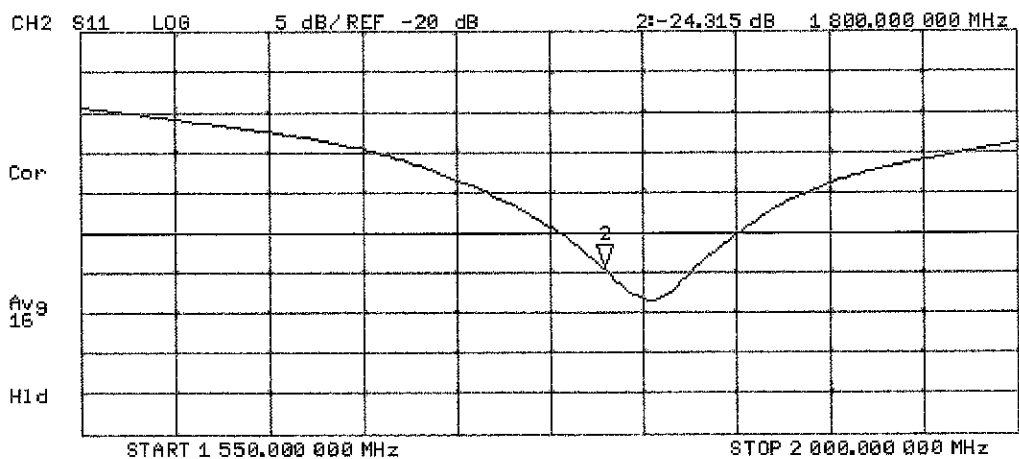
Impedance Measurement Plot for Body TSL

24 Sep 2012 14:50:44
 [CH1] S11 1 U FS 2: 44.922 Ω -2.7656 Ω 31.971 pF 1 800.000 000 MHz

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Client **Eurofins**

Certificate No: **D1900V2-5d025_Sep12**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d025**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **September 21, 2012**

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Calibrated by: **Israe El-Naouq** **Laboratory Technician**

Signature

Approved by: **Katja Pokovic** **Technical Manager**

Israe El-Naouq
Katja Pokovic

Issued: September 21, 2012

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Accreditation No.: **SCS 108**

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Additional Documentation:

- DASY4/5 System Handbook

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- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.6 $\pm$ 6 %	1.37 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.78 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	39.8 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.17 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.9 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.5 $\pm$ 6 %	1.54 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	40.3 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.42 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	21.5 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0 Ω + 4.7 j Ω
Return Loss	- 26.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω + 5.1 j Ω
Return Loss	- 24.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.198 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 29, 2002

DASY5 Validation Report for Head TSL

Date: 21.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d025

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

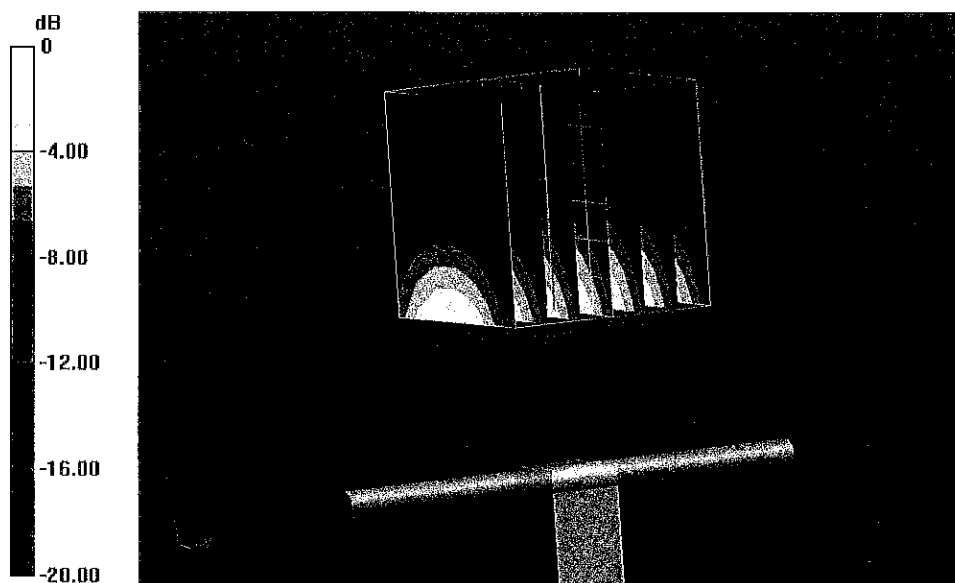
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.699 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 17.364 mW/g

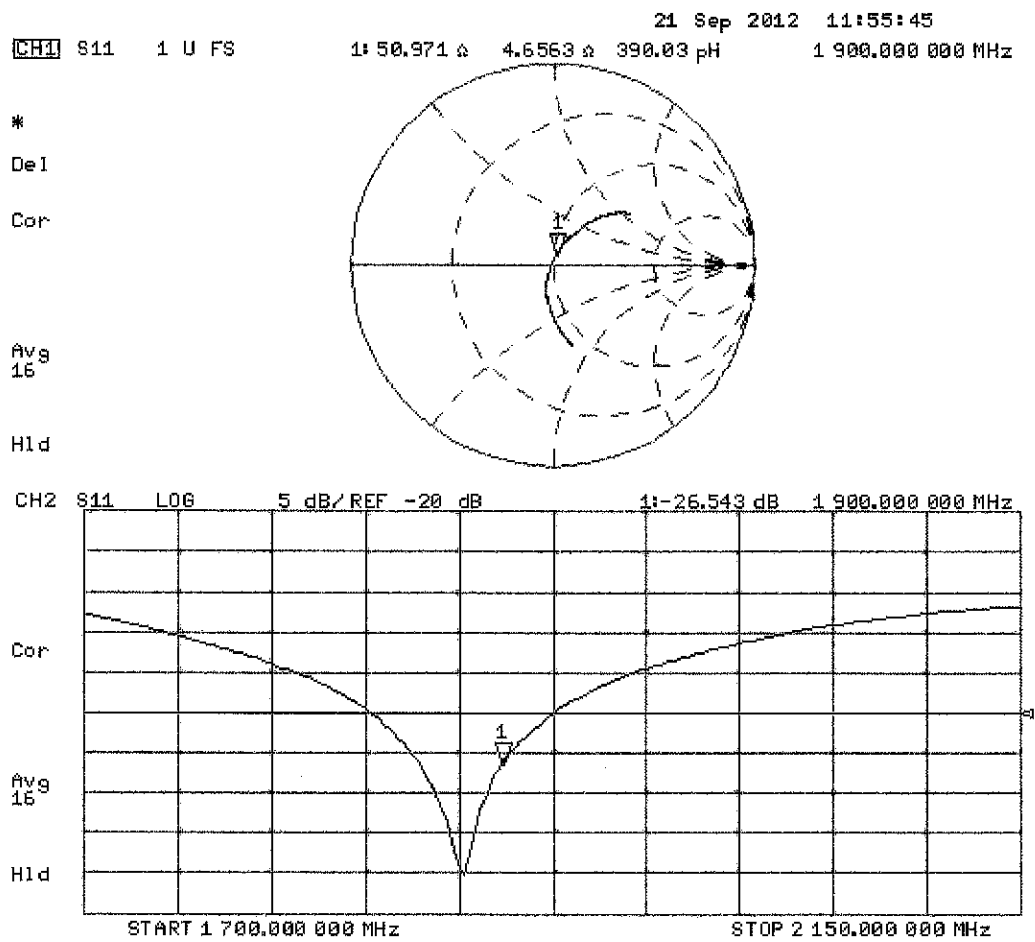
SAR(1 g) = 9.78 mW/g; SAR(10 g) = 5.17 mW/g

Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 21.51 dB W/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.09.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d025

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

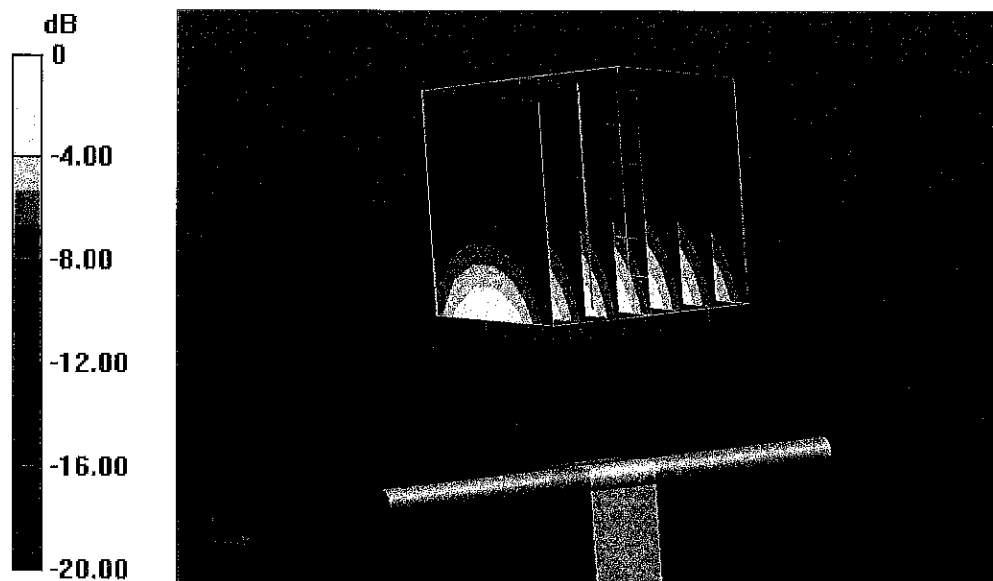
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.699 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 17.830 mW/g

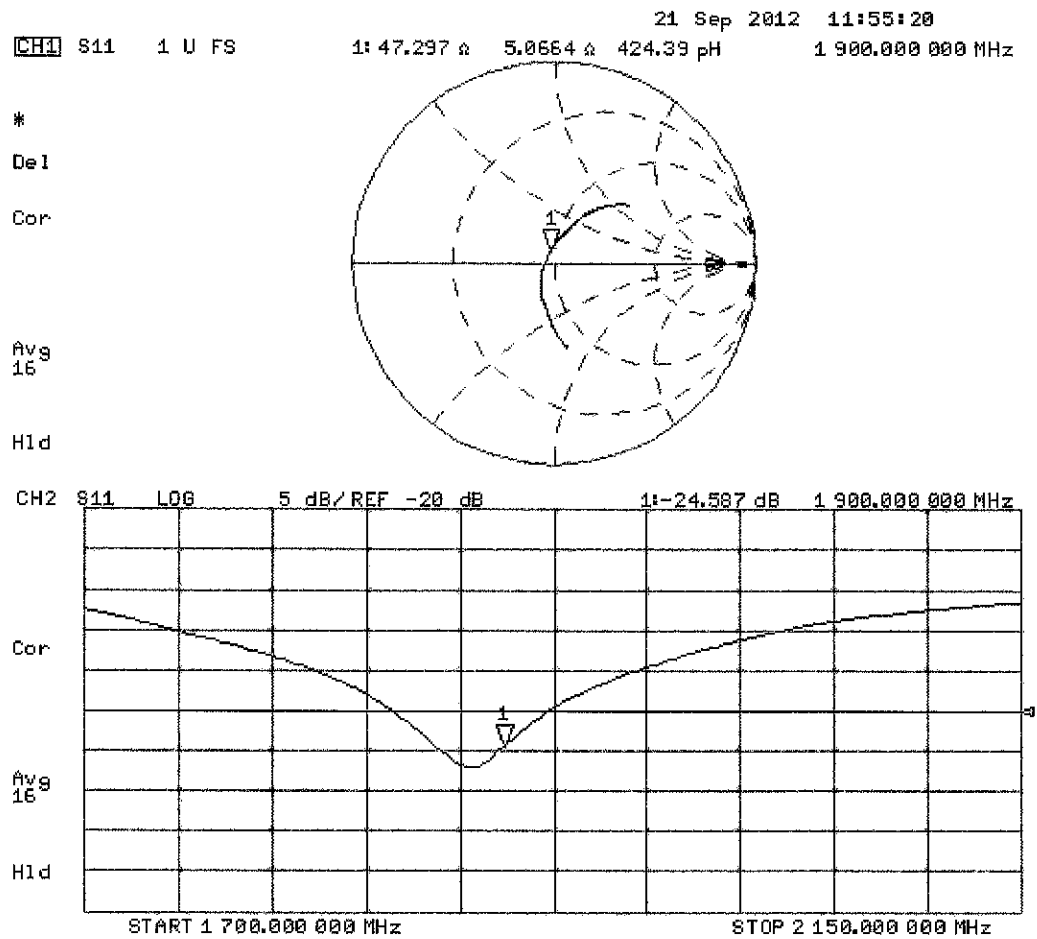
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.42 mW/g

Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 22.14 dB W/kg

Impedance Measurement Plot for Body TSL



ANNEX B System Validation Reports

Test Laboratory: Eurofins Product Service GmbH

Dipol Valid.900 (m)_250mW 27.11.2013

DUT: Dipole 900 MHz; Type: D900V2; Serial: 164

Communication System: UID 0 - n/a, CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: Muscle 900 MHz Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.03 \text{ S/m}$; $\epsilon_r = 54.419$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.98 W/kg

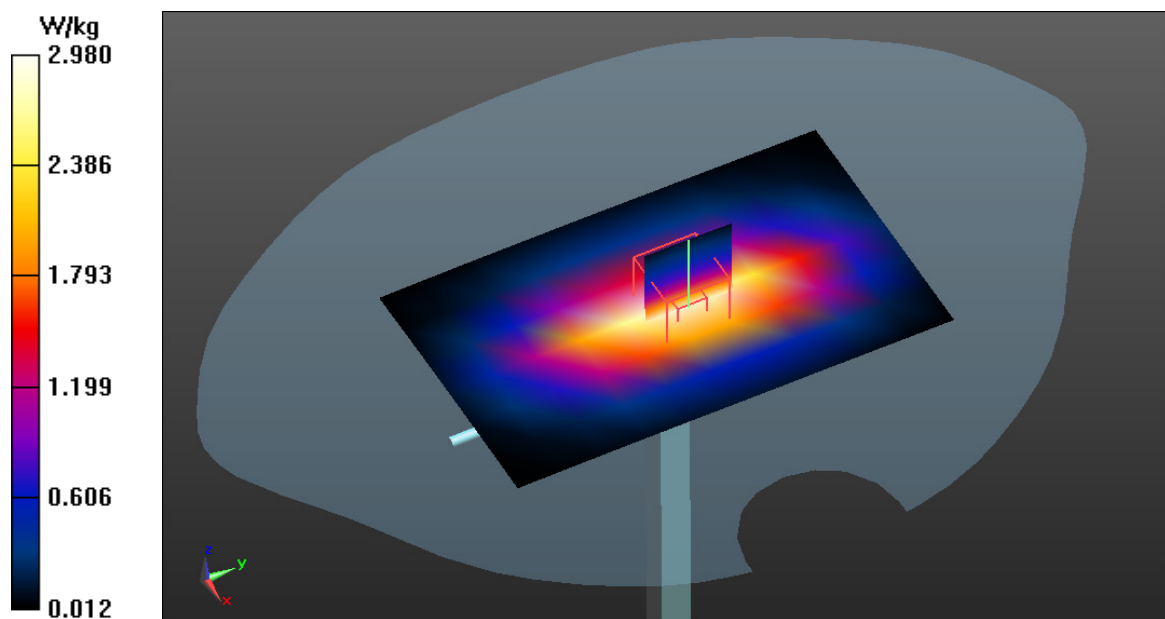
System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.199 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 4.00 W/kg

SAR(1 g) = 2.8 W/kg; SAR(10 g) = 1.84 W/kg

Maximum value of SAR (measured) = 3.04 W/kg



Test Laboratory: Eurofins Product Service GmbH

Dipol Valid.900 (m)_250mW 05.12.2013

DUT: Dipole 900 MHz; Type: D900V2; Serial: 164

Communication System: UID 0 - n/a, CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: Muscle 900 MHz Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.03 \text{ S/m}$; $\epsilon_r = 54.419$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 3.16 W/kg

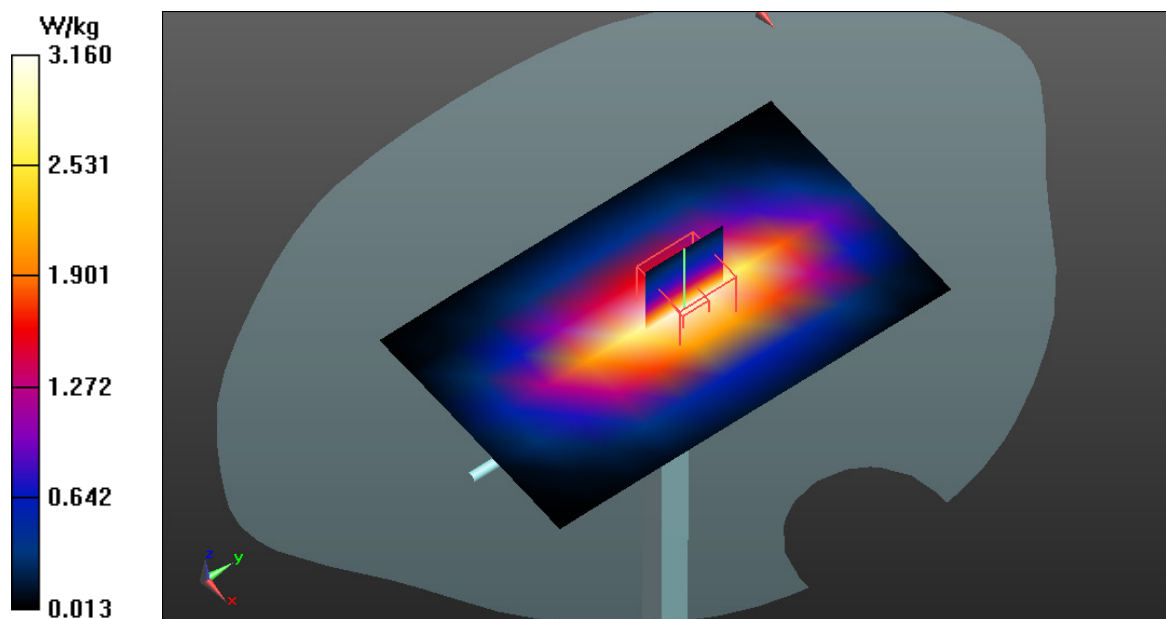
System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.708 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 4.27 W/kg

SAR(1 g) = 2.98 W/kg; SAR(10 g) = 1.96 W/kg

Maximum value of SAR (measured) = 3.25 W/kg



Test Laboratory: Eurofins Product Service GmbH

Dipol Valid.1800 (m)_250mW 03.12.2013

DUT: Dipole 1800 MHz (D1800V2); Type: SA AAD 180 BA; Serial: 2d046

Communication System: UID 0 - n/a, CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: Muscle 1800 MHz Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.584 \text{ S/m}$; $\epsilon_r = 54.283$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

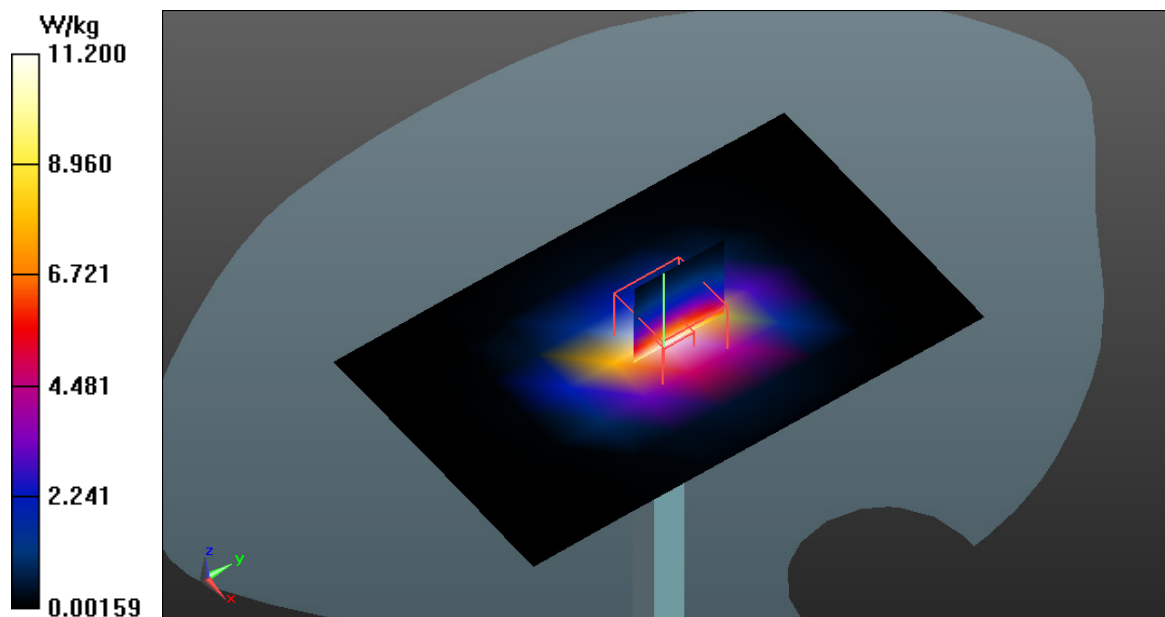
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 11.2 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 90.874 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.58 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



Test Laboratory: Eurofins Product Service GmbH

Dipol Valid.1900 (m)_250mW 04.12.2013

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d025

Communication System: UID 0 - n/a, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Muscle 1900 MHz Medium parameters used: $f = 1900$ MHz; $\sigma = 1.464$ S/m; $\epsilon_r = 54.371$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

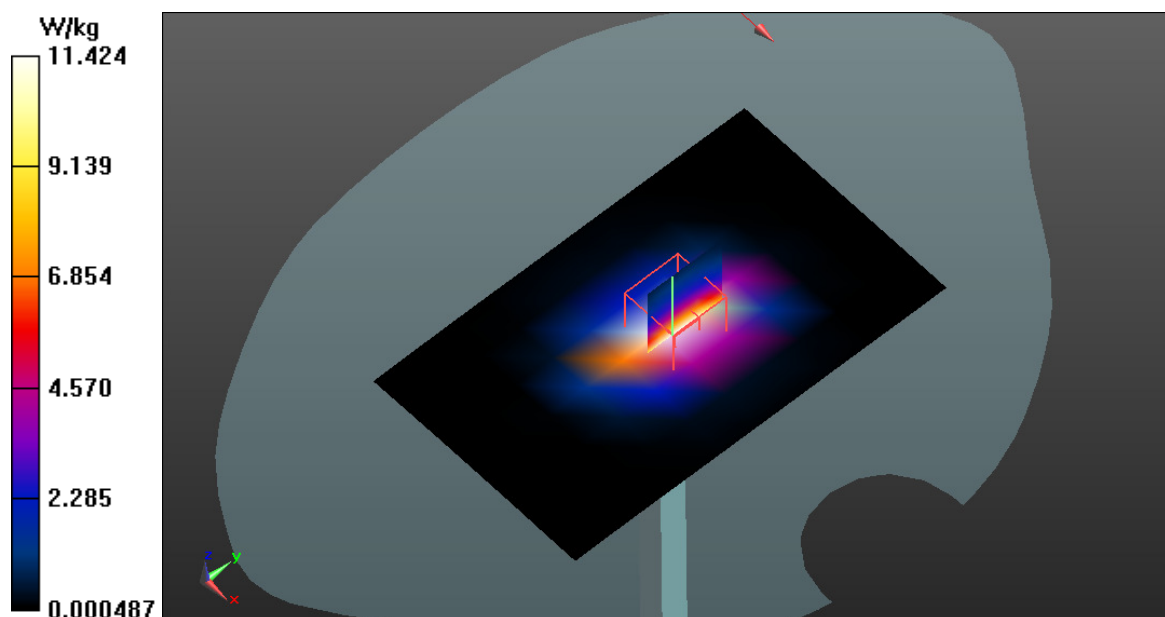
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 11.4 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.319 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.88 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



Test Laboratory: Eurofins Product Service GmbH

Dipol Valid.1900 (m)_250mW 04.12.2013

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d025

Communication System: UID 0 - n/a, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: Muscle 1900 MHz Medium parameters used: $f = 1900$ MHz; $\sigma = 1.464$ S/m; $\epsilon_r = 54.371$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

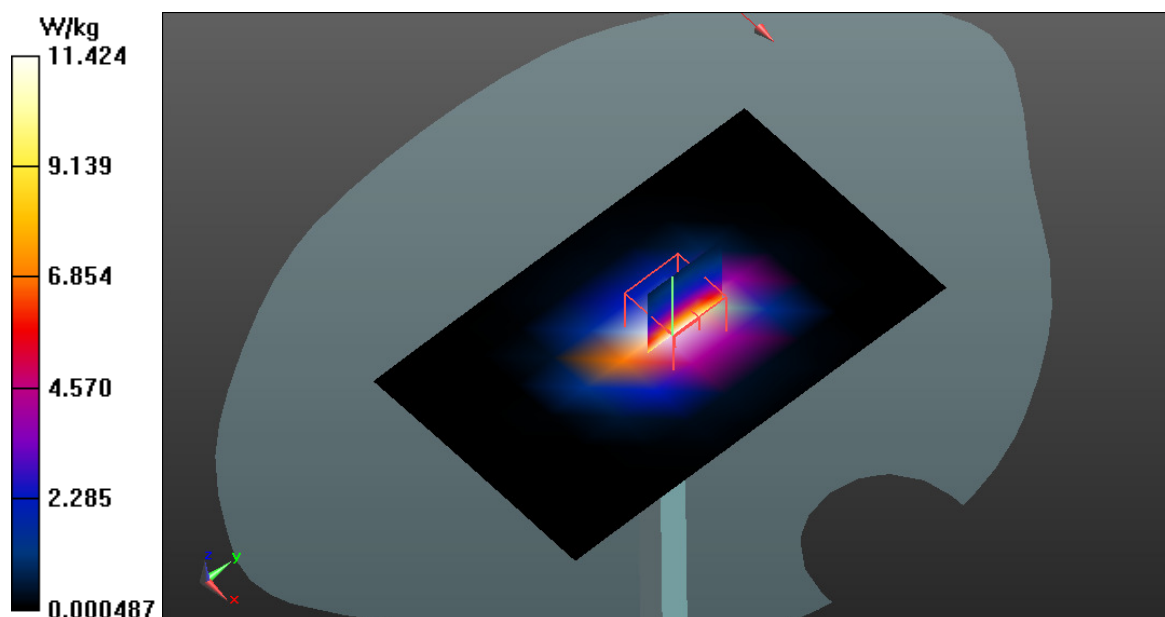
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 11.4 W/kg

System Performance Check at Frequencies above 1 GHz/d=10mm, Pin=250 mW, dist=4.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.319 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.88 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



ANNEX C SAR Measurement Reports

Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH128_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.949$ S/m; $\epsilon_r = 55.419$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm

Maximum value of SAR (measured) = 1.06 W/kg

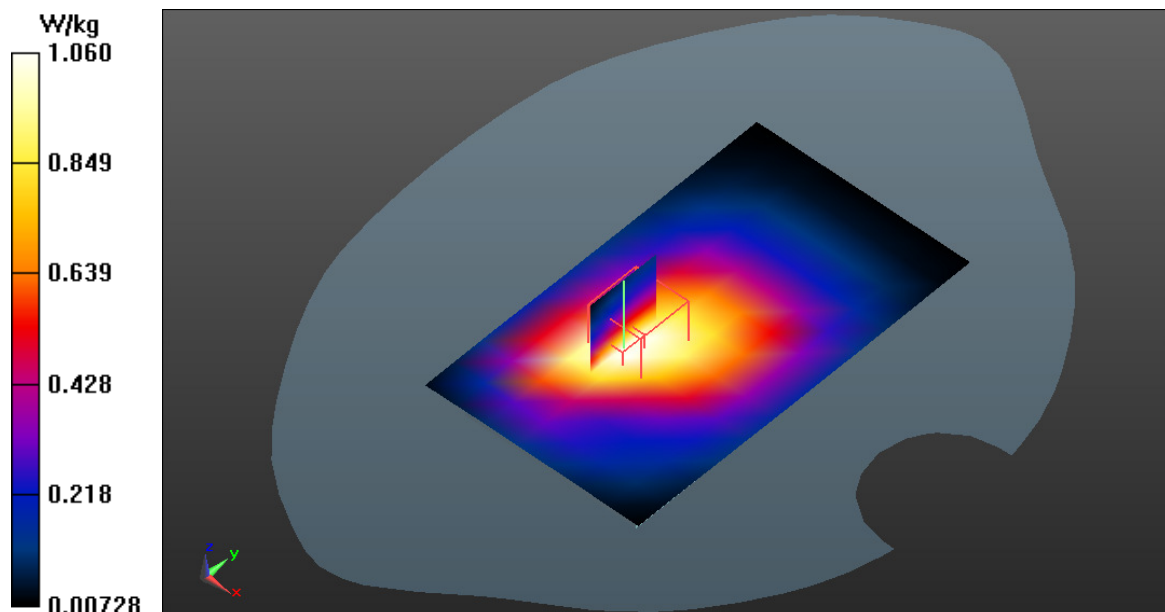
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 31.447 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.708 W/kg

Maximum value of SAR (measured) = 1.08 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH128_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.949$ S/m; $\epsilon_r = 55.419$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm

Maximum value of SAR (measured) = 1.14 W/kg

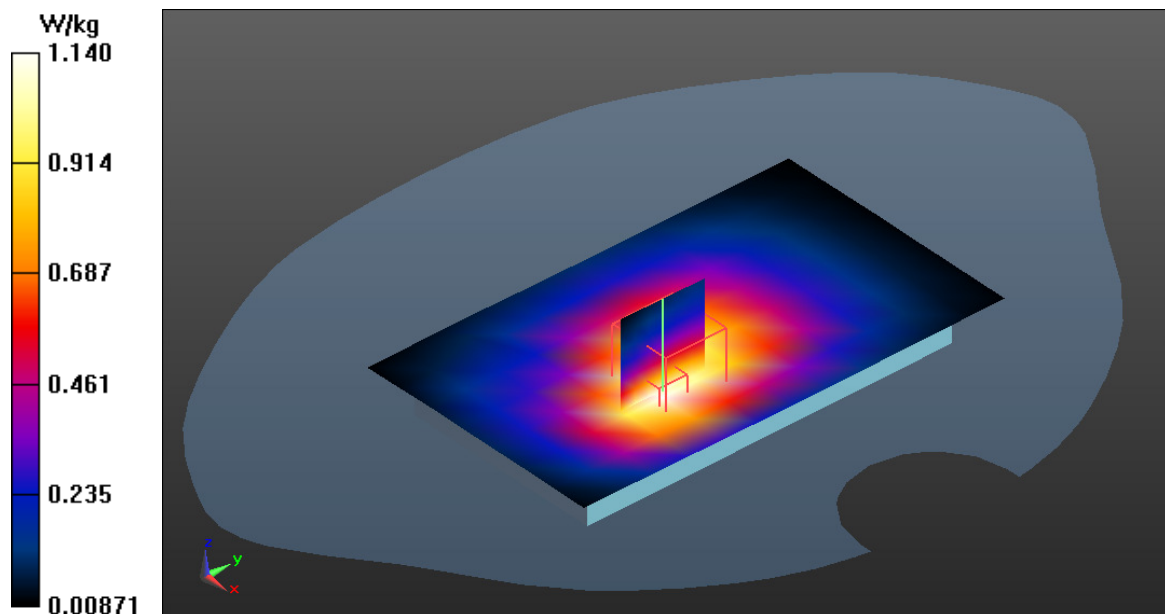
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 31.804 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.724 W/kg

Maximum value of SAR (measured) = 1.16 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH188_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 836.2 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 836.2$ MHz; $\sigma = 0.953$ S/m; $\epsilon_r = 55.299$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm

Maximum value of SAR (measured) = 1.12 W/kg

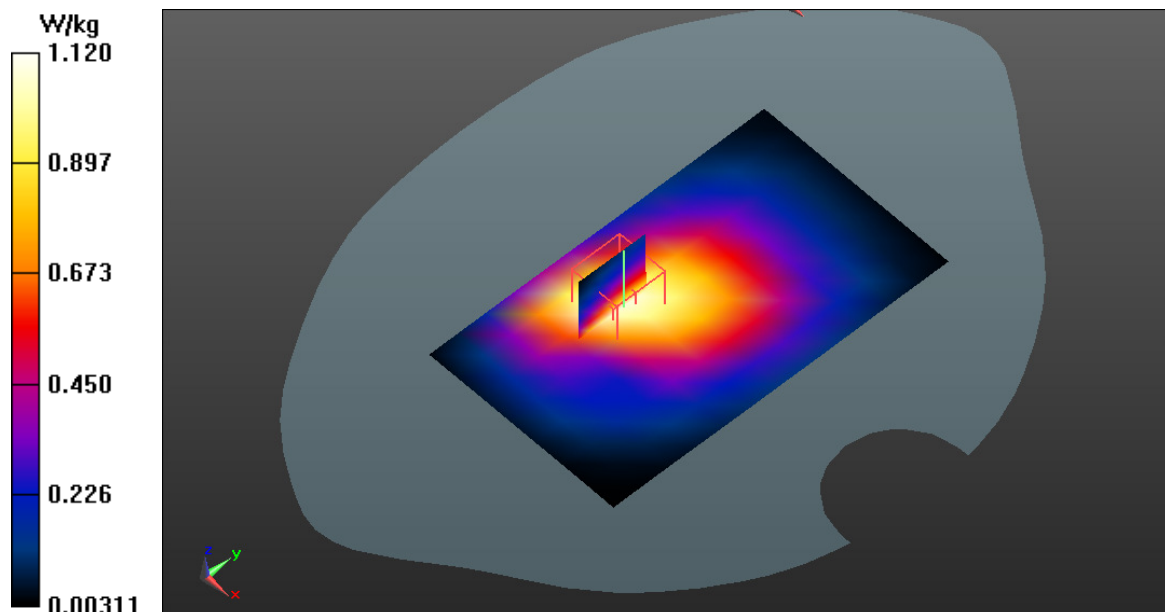
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 32.284 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.722 W/kg

Maximum value of SAR (measured) = 1.13 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH188_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 836.2 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 836.2$ MHz; $\sigma = 0.953$ S/m; $\epsilon_r = 55.299$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: dx=12.5mm, dy=12.5mm

Maximum value of SAR (measured) = 1.11 W/kg

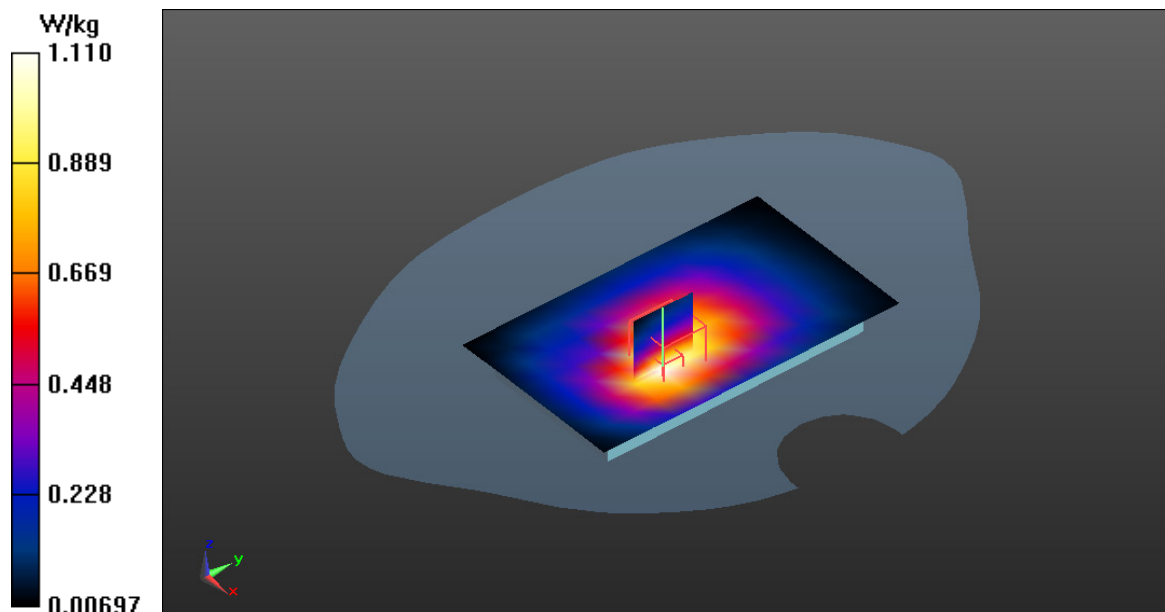
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.889 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.712 W/kg

Maximum value of SAR (measured) = 1.12 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH251_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.965$ S/m; $\epsilon_r = 55.112$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm

Maximum value of SAR (measured) = 1.13 W/kg

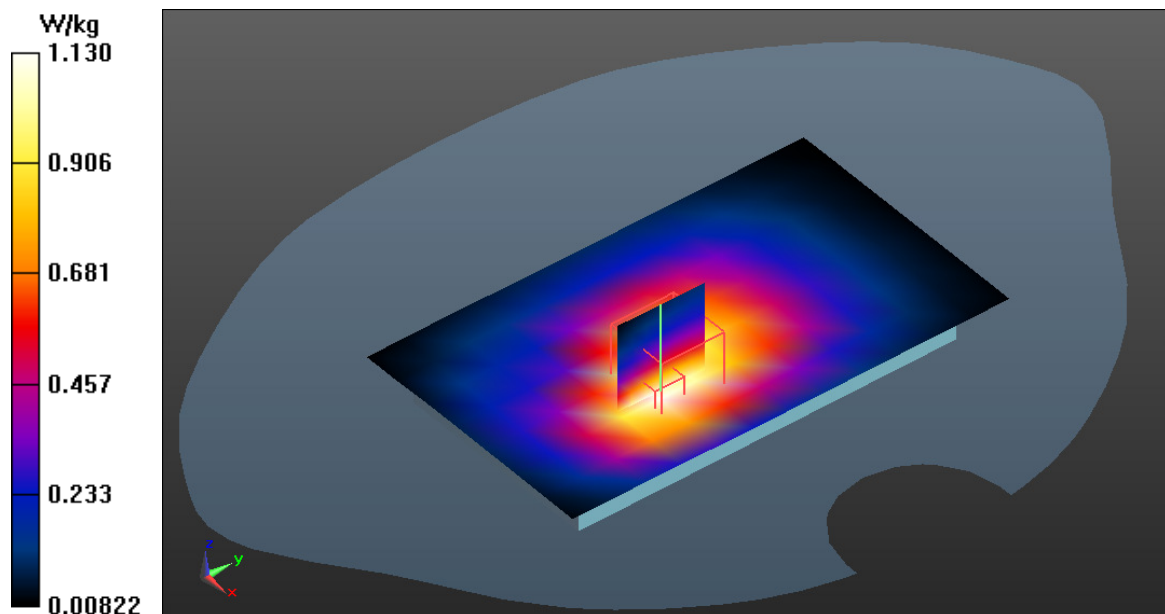
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 31.105 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.703 W/kg

Maximum value of SAR (measured) = 1.10 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS850_CH251_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.30042

Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.965$ S/m; $\epsilon_r = 55.112$;

$\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm

Maximum value of SAR (measured) = 1.13 W/kg

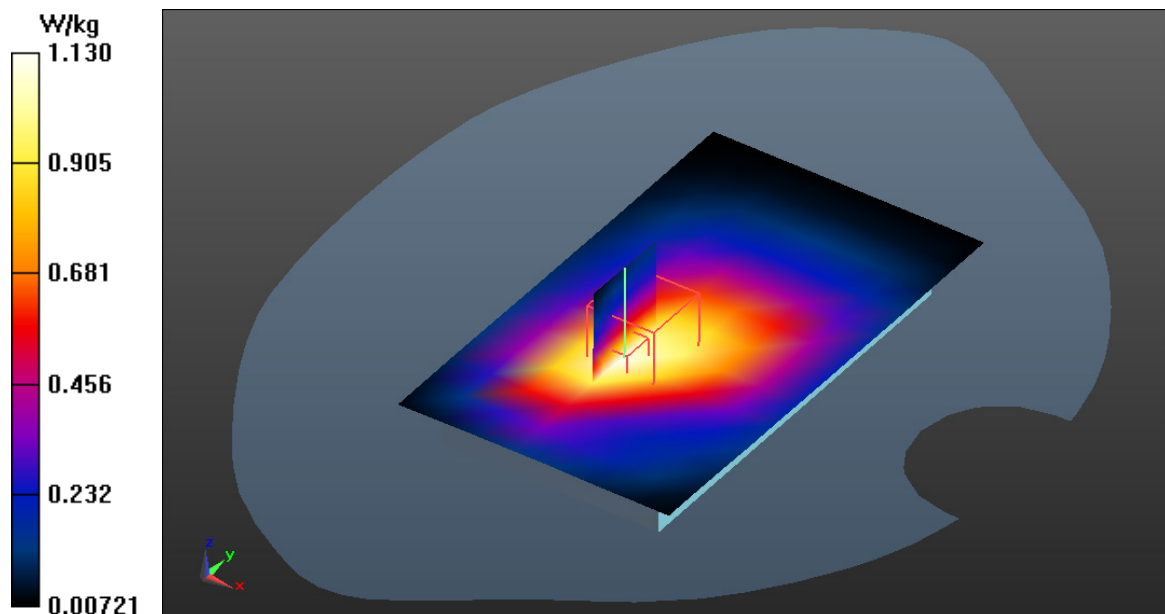
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 31.672 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.716 W/kg

Maximum value of SAR (measured) = 1.10 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH512_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1850.2 \text{ MHz}$; $\sigma = 1.453 \text{ S/m}$; $\epsilon_r = 54.56$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

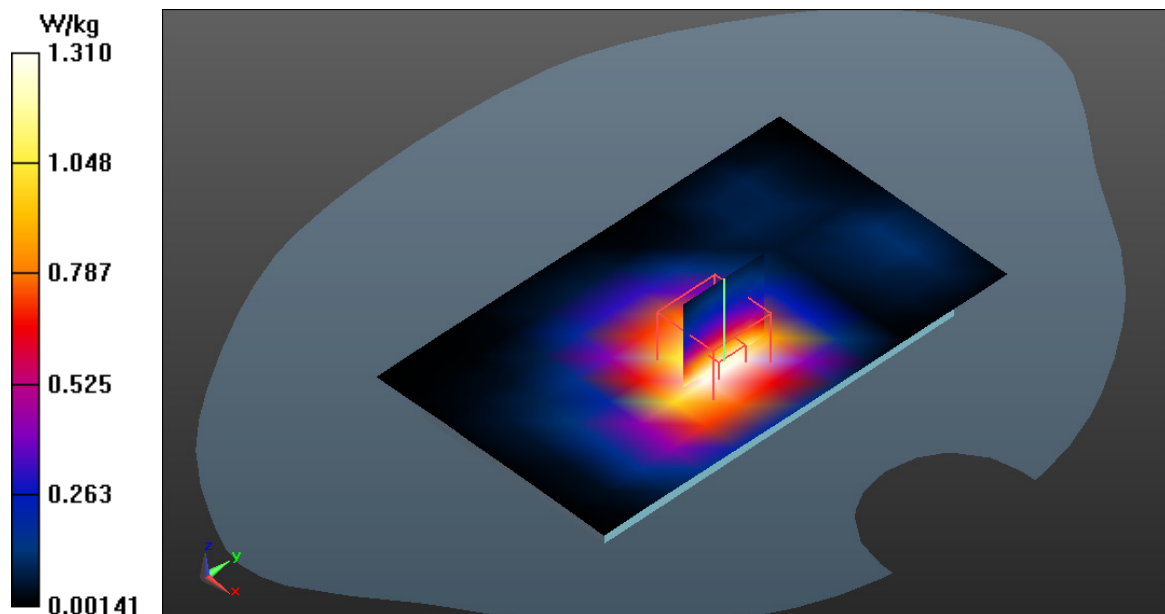
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.31 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 26.910 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.814 W/kg
Maximum value of SAR (measured) = 1.38 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH512_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1850.2 \text{ MHz}$; $\sigma = 1.453 \text{ S/m}$; $\epsilon_r = 54.56$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

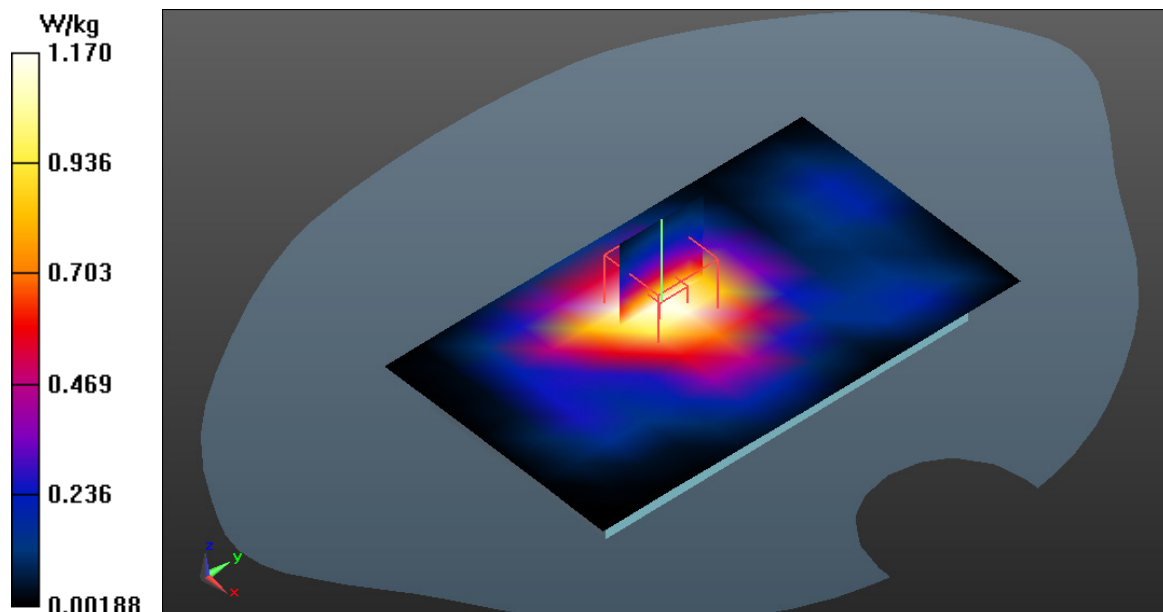
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.17 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.701 V/m ; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 1.17 W/kg ; SAR(10 g) = 0.747 W/kg
Maximum value of SAR (measured) = 1.27 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH661_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.461 \text{ S/m}$; $\epsilon_r = 54.42$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

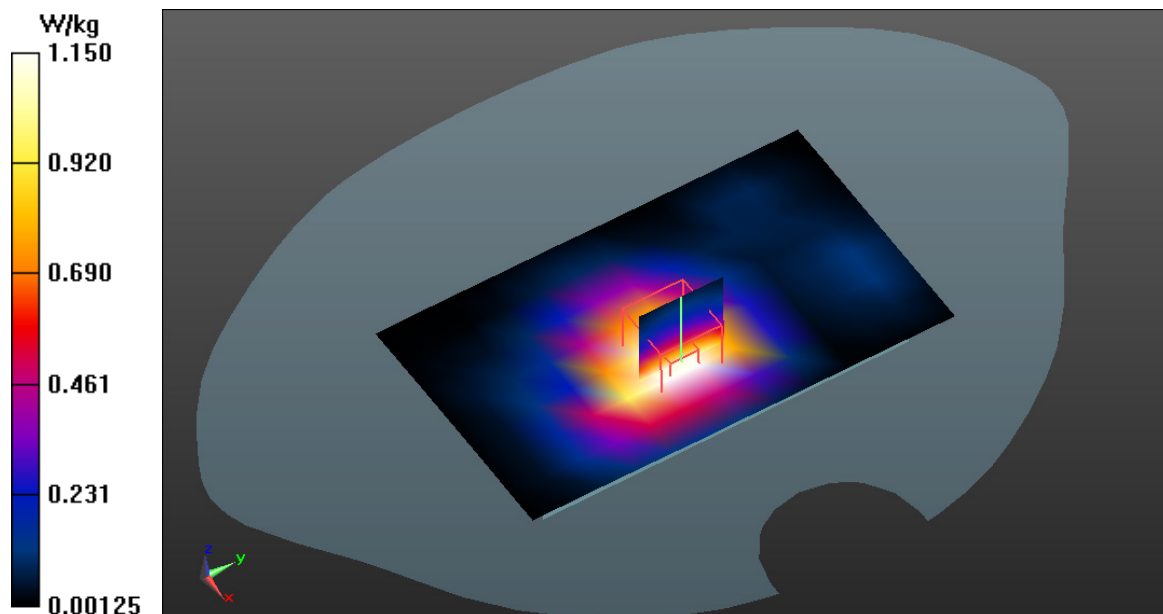
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.15 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 25.910 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.744 W/kg
Maximum value of SAR (measured) = 1.26 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH661_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.461 \text{ S/m}$; $\epsilon_r = 54.42$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

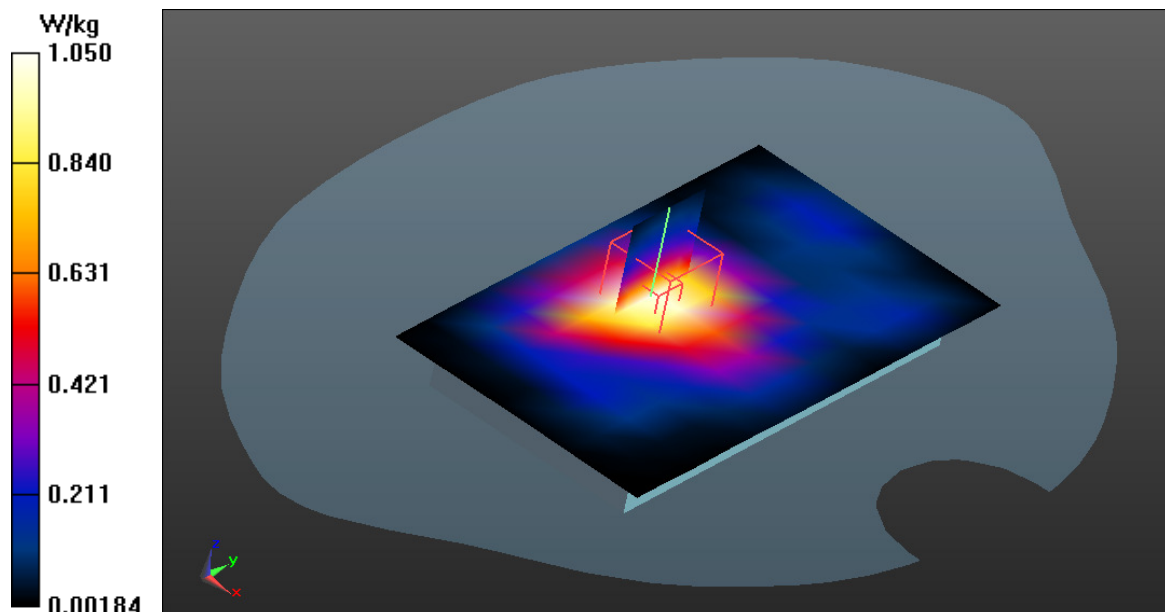
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.05 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 25.600 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.50 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.654 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH810_1xSlot_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.479 \text{ S/m}$; $\epsilon_r = 54.33$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

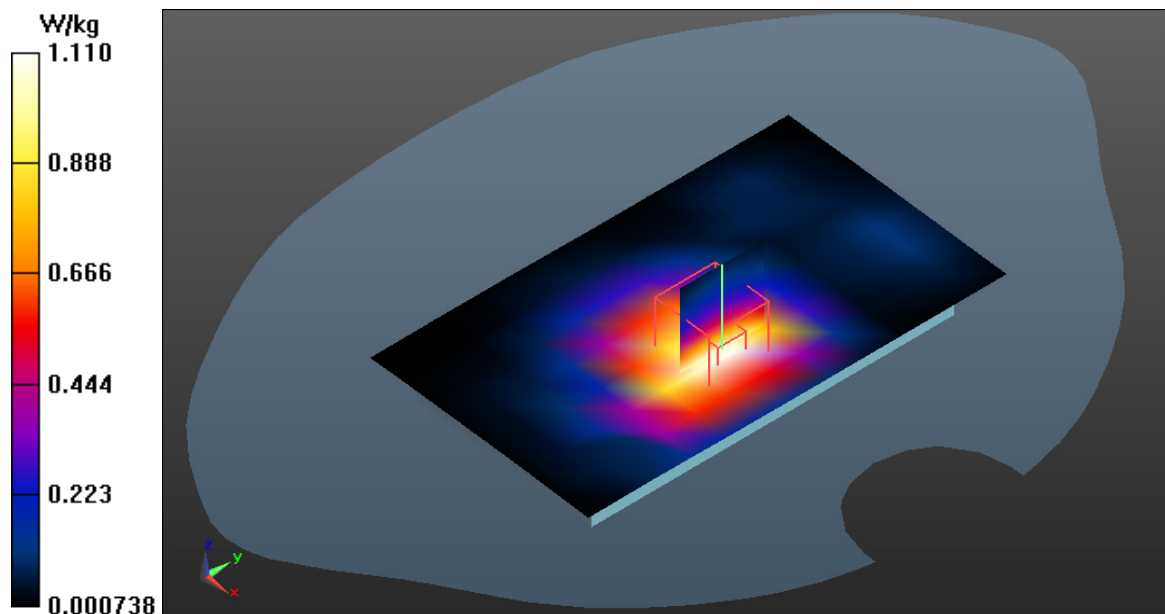
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.11 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 24.389 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.664 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



Test Laboratory: Eurofins Product Service GmbH

GPRS1900_CH810_1xSlot_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.30042
Medium: Muscle 1900 MHz Medium parameters used: $f = 1909.8 \text{ MHz}$; $\sigma = 1.479 \text{ S/m}$; $\epsilon_r = 54.33$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

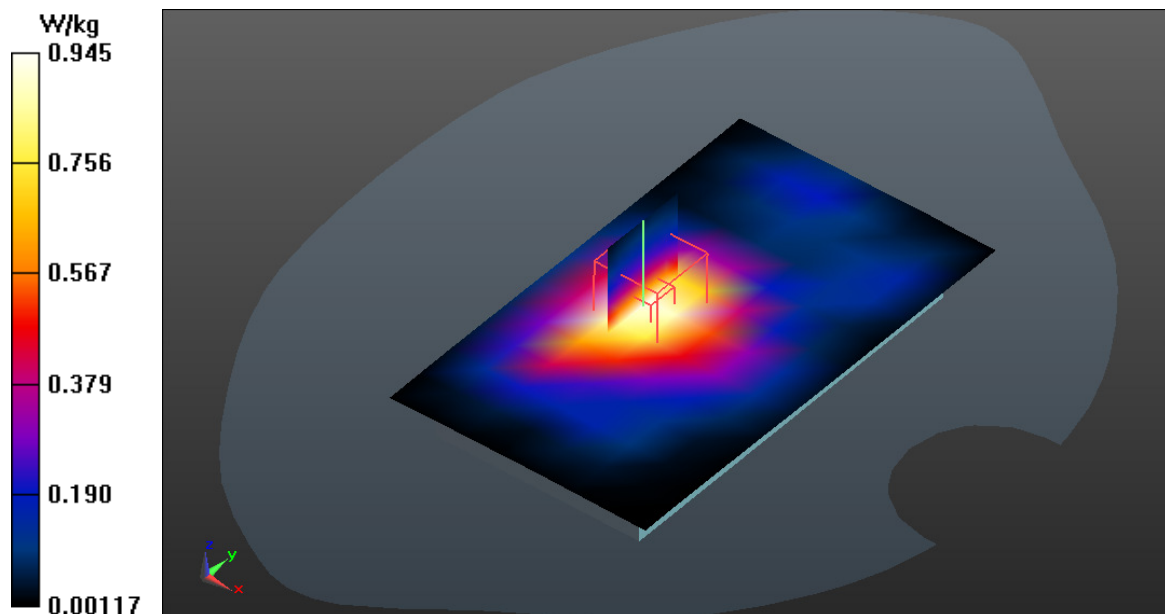
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 0.945 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 24.043 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.925 W/kg; SAR(10 g) = 0.580 W/kg
Maximum value of SAR (measured) = 1.01 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9263_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1852.6 MHz; Duty Cycle: 1:1
Medium: Muscle 1900 MHz Medium parameters used: $f = 1852.6 \text{ MHz}$; $\sigma = 1.458 \text{ S/m}$; $\epsilon_r = 54.53$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

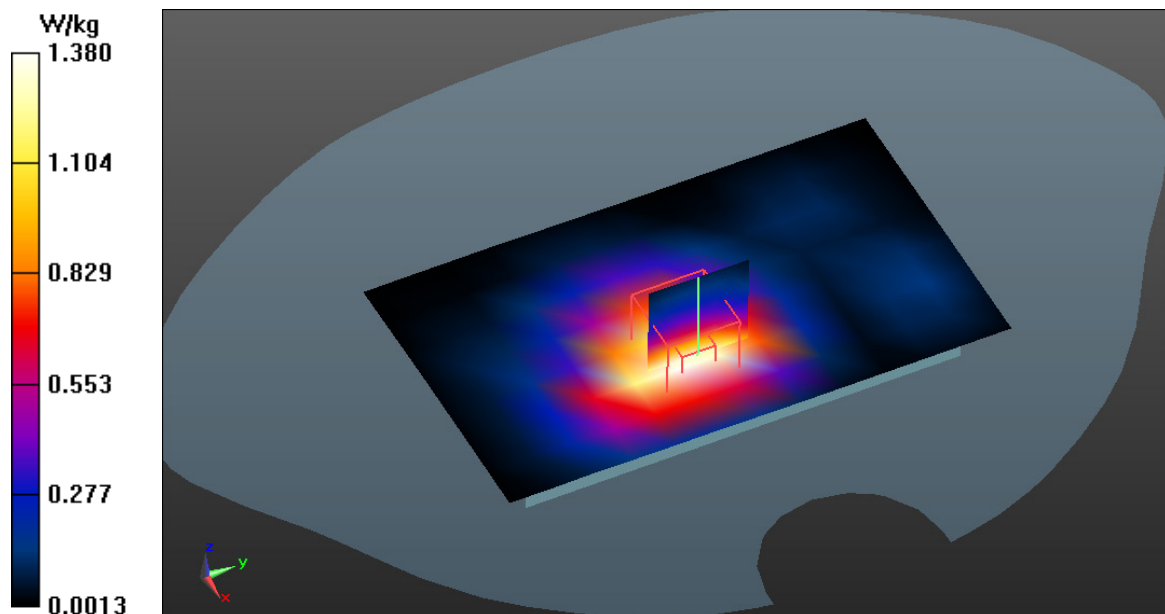
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.38 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.416 V/m ; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.82 W/kg
SAR(1 g) = 1.31 W/kg ; SAR(10 g) = 0.845 W/kg
Maximum value of SAR (measured) = 1.44 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9263_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1852.6 MHz; Duty Cycle: 1:1
Medium: Muscle 1900 MHz Medium parameters used: $f = 1852.6 \text{ MHz}$; $\sigma = 1.458 \text{ S/m}$; $\epsilon_r = 54.53$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

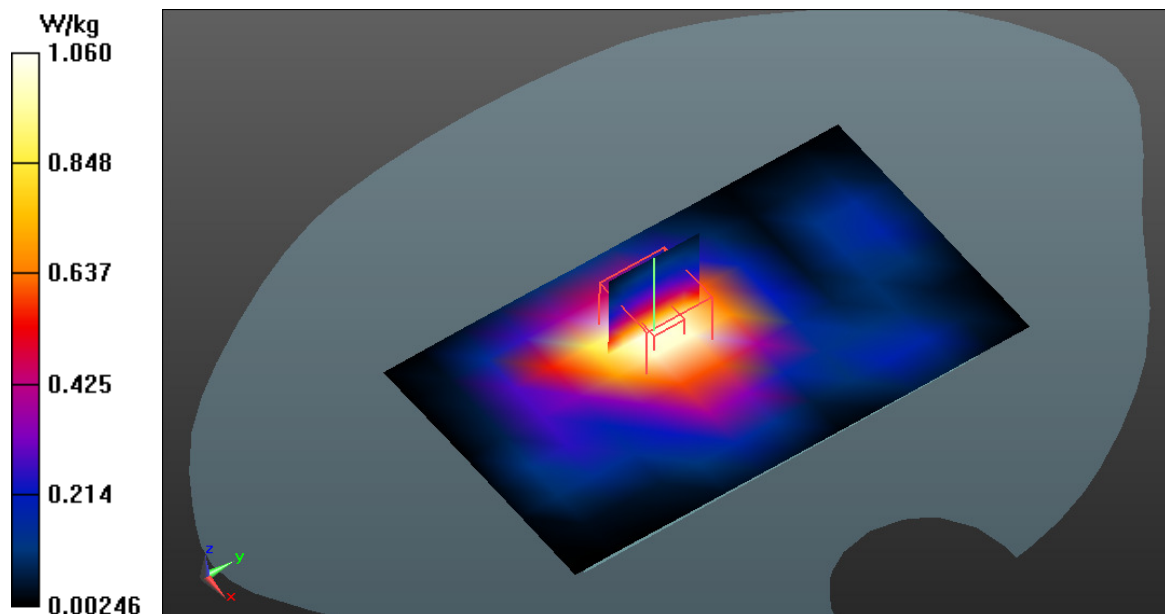
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.06 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 26.607 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.688 W/kg
Maximum value of SAR (measured) = 1.18 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9400_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: Muscle 1900 MHz Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.461 \text{ S/m}$; $\epsilon_r = 54.42$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

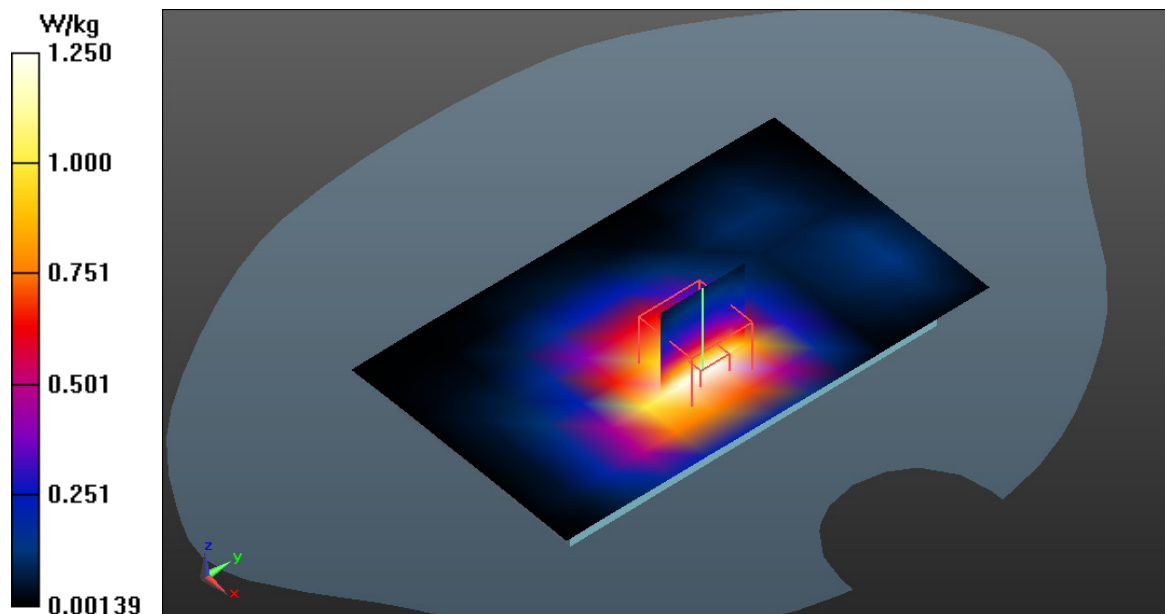
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.25 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 24.604 V/m ; Power Drift = 0.61 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.26 W/kg ; SAR(10 g) = 0.816 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9400_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: Muscle 1900 MHz Medium parameters used: $f = 1880$ MHz; $\sigma = 1.461$ S/m; $\epsilon_r = 54.42$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

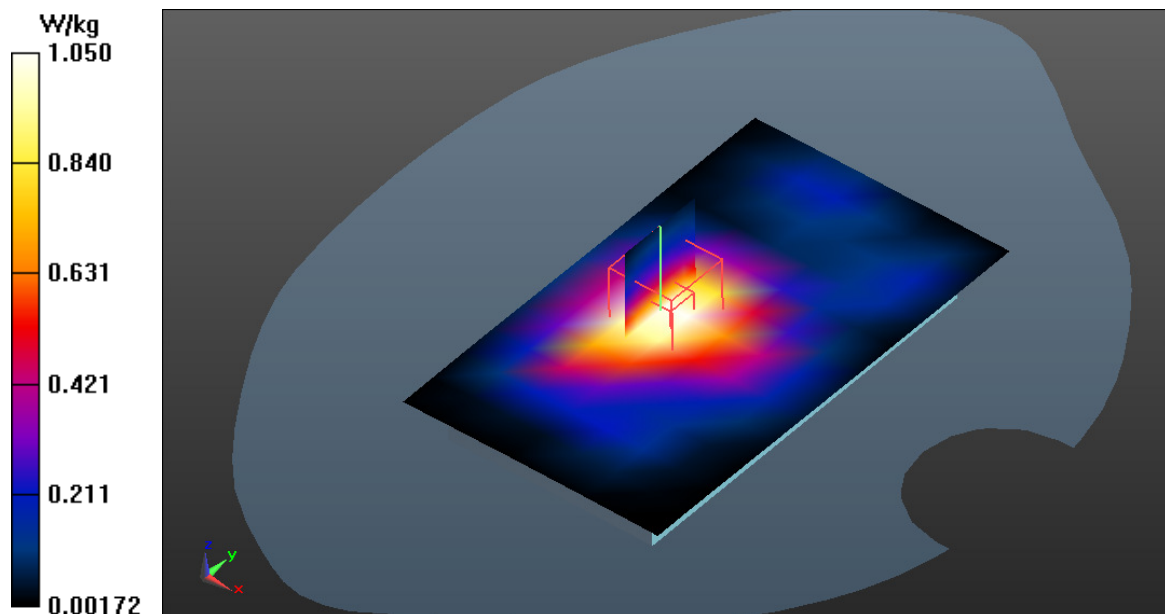
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: dx=12.5mm, dy=12.5mm
Maximum value of SAR (measured) = 1.05 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.947 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.684 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9537_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1907.4 MHz; Duty Cycle: 1:1

Medium: Muscle 1900 MHz Medium parameters used: $f = 1907.4 \text{ MHz}$; $\sigma = 1.476 \text{ S/m}$; $\epsilon_r = 54.352$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$

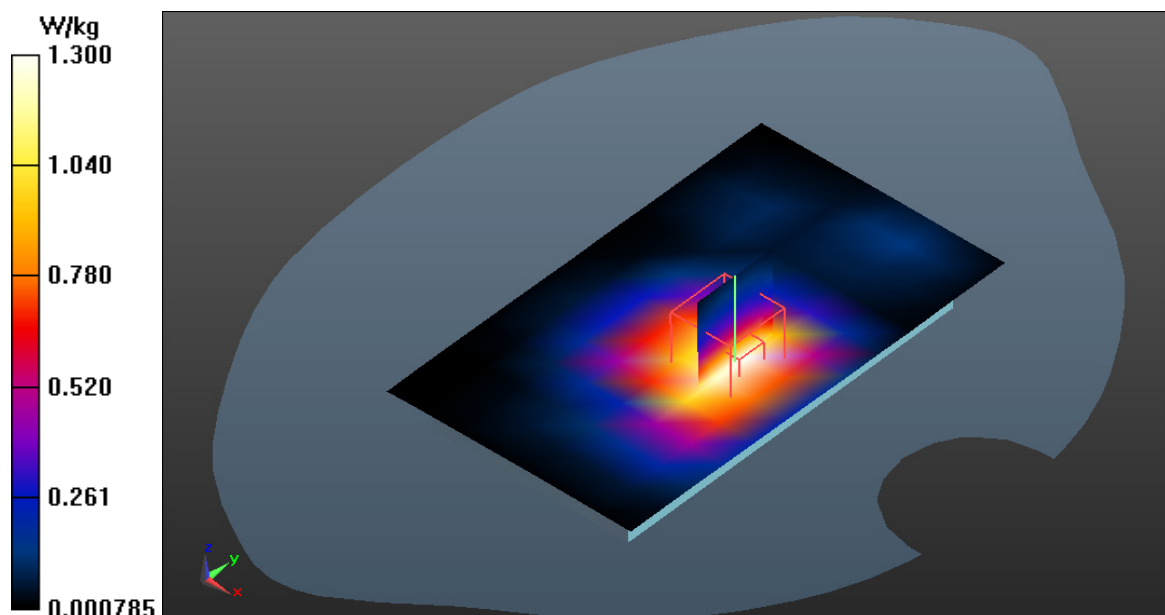
Maximum value of SAR (measured) = 1.30 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.912 V/m ; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.68 W/kg

SAR(1 g) = 1.18 W/kg ; SAR(10 g) = 0.760 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD II_CH9537_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band II; Frequency: 1907.4 MHz; Duty Cycle: 1:1

Medium: Muscle 1900 MHz Medium parameters used: $f = 1907.4 \text{ MHz}$; $\sigma = 1.476 \text{ S/m}$; $\epsilon_r = 54.352$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$

Maximum value of SAR (measured) = 1.00 W/kg

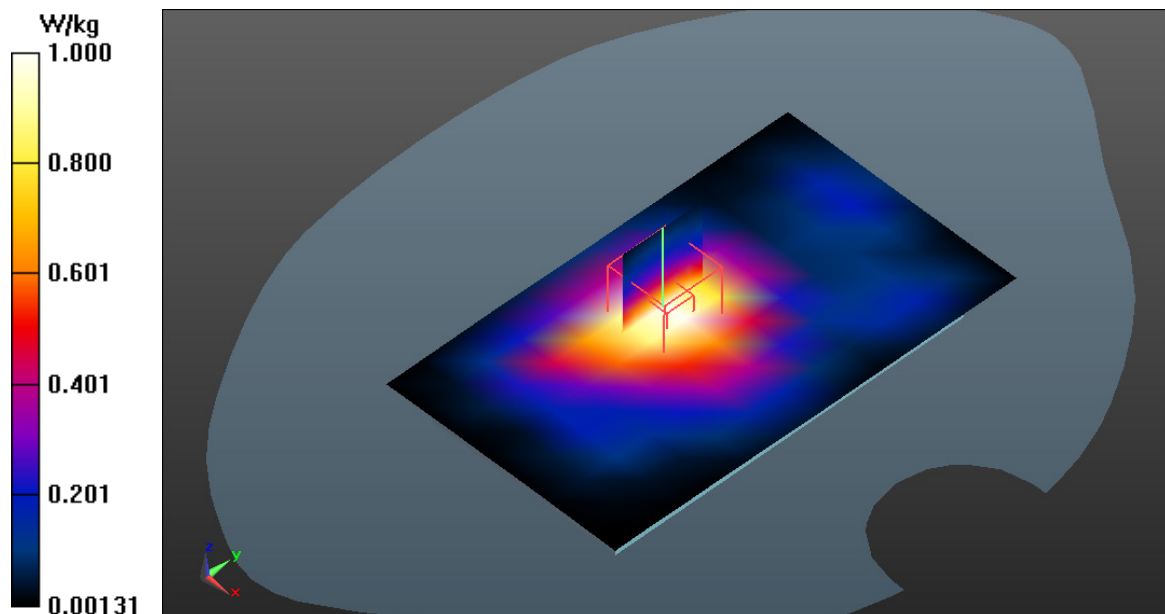
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 26.218 V/m ; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 1.02 W/kg ; SAR(10 g) = 0.643 W/kg

Maximum value of SAR (measured) = 1.11 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1313_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1712.6 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used (interpolated): $f = 1712.6 \text{ MHz}$; $\sigma = 1.495 \text{ S/m}$; $\epsilon_r = 54.418$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

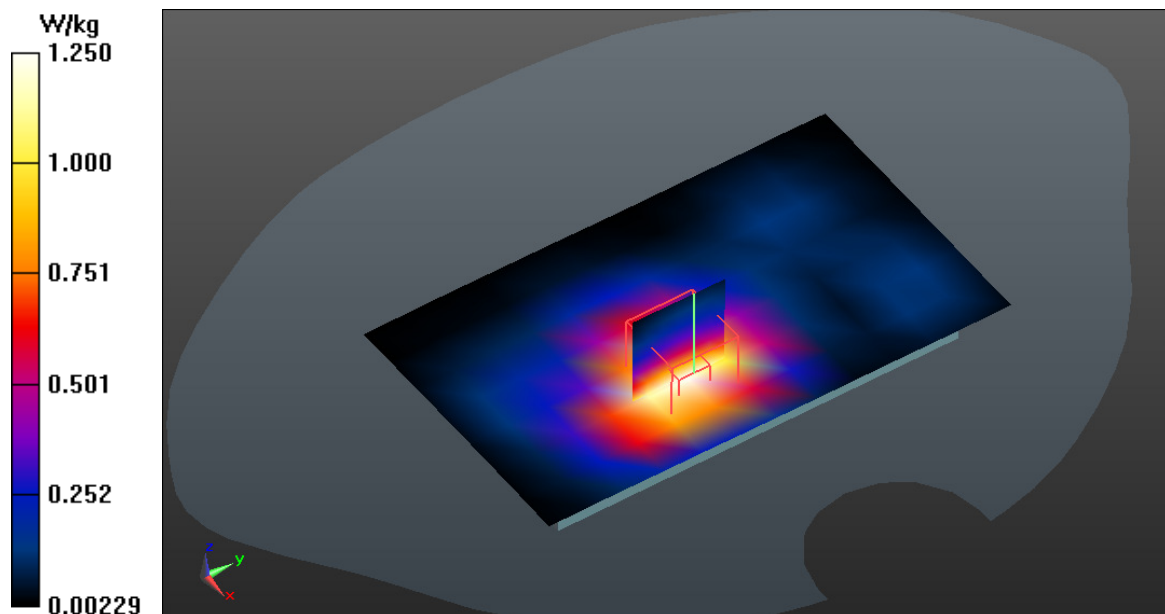
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.25 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 22.576 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.730 W/kg
Maximum value of SAR (measured) = 1.24 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1313_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1712.6 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used (interpolated): $f = 1712.6 \text{ MHz}$; $\sigma = 1.495 \text{ S/m}$; $\epsilon_r = 54.418$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

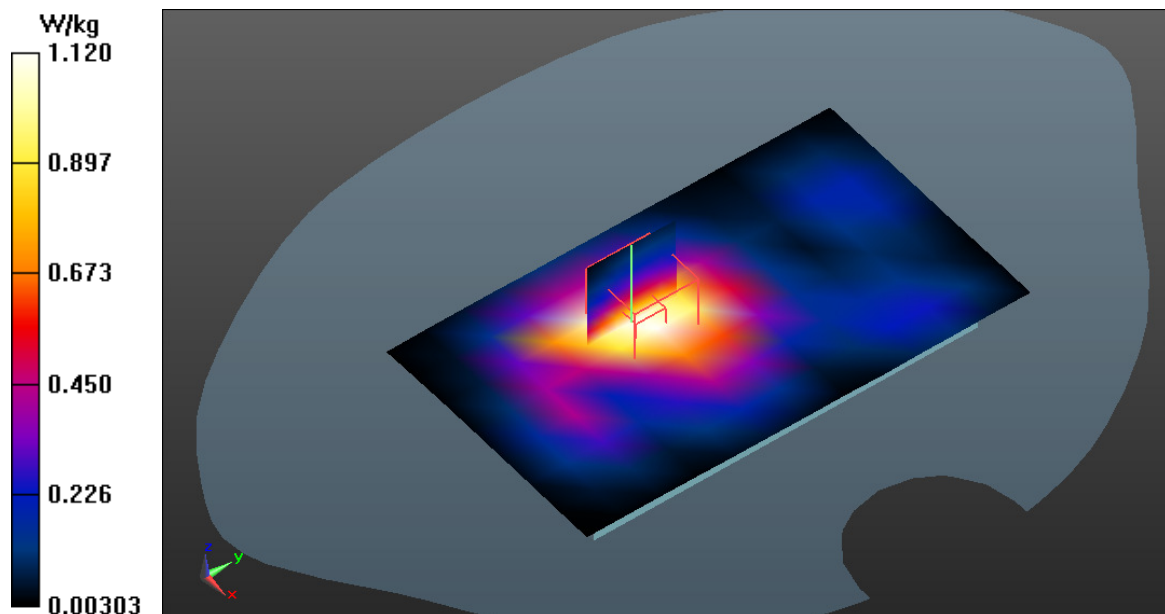
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.12 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 25.568 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.698 W/kg
Maximum value of SAR (measured) = 1.21 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1450_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1740 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used: $f = 1740 \text{ MHz}$; $\sigma = 1.528 \text{ S/m}$; $\epsilon_r = 54.392$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

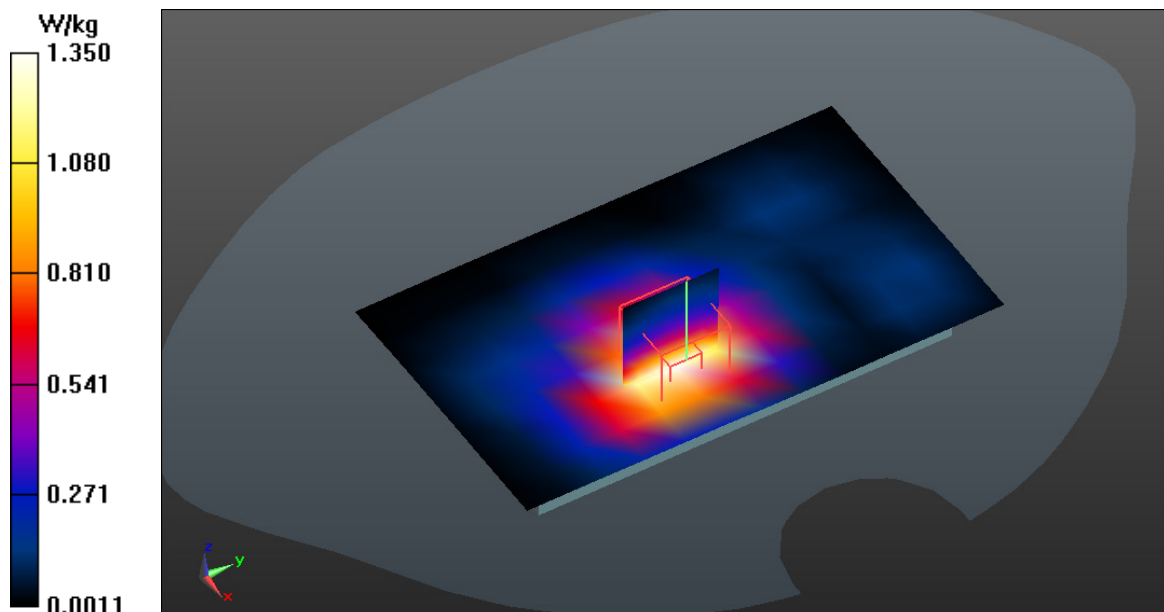
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.35 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 23.312 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 1.23 W/kg; SAR(10 g) = 0.784 W/kg
Maximum value of SAR (measured) = 1.34 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1450_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1740 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used: $f = 1740$ MHz; $\sigma = 1.528$ S/m; $\epsilon_r = 54.392$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

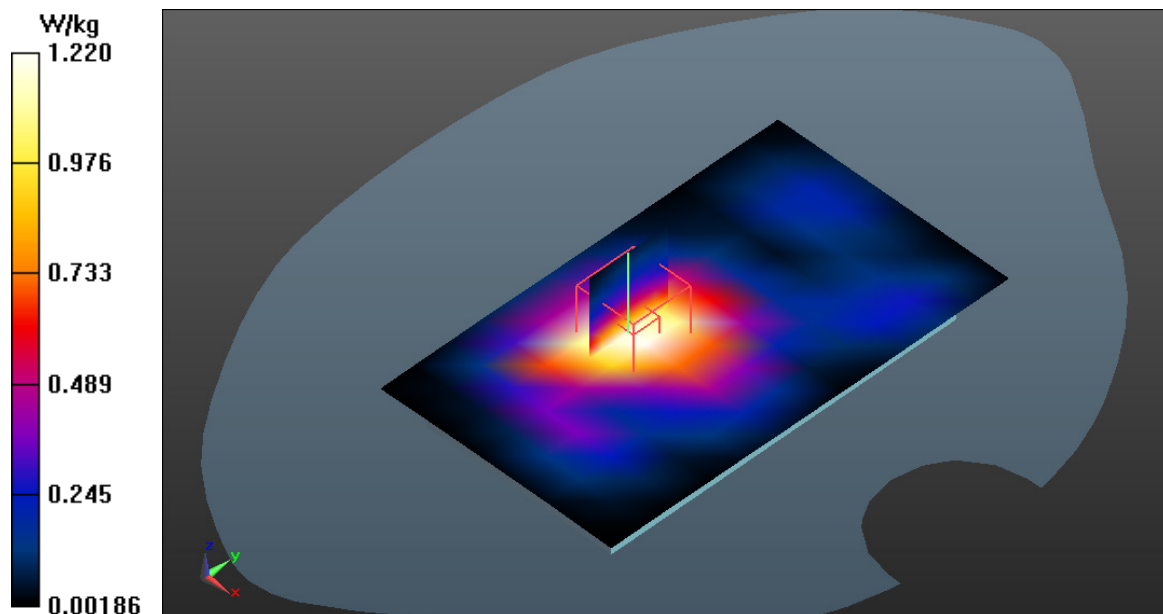
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: dx=12.5mm, dy=12.5mm
Maximum value of SAR (measured) = 1.22 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.893 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 1.21 W/kg; SAR(10 g) = 0.756 W/kg
Maximum value of SAR (measured) = 1.31 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1512_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1752.4 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used (interpolated): $f = 1752.4 \text{ MHz}$; $\sigma = 1.539 \text{ S/m}$; $\epsilon_r = 54.407$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

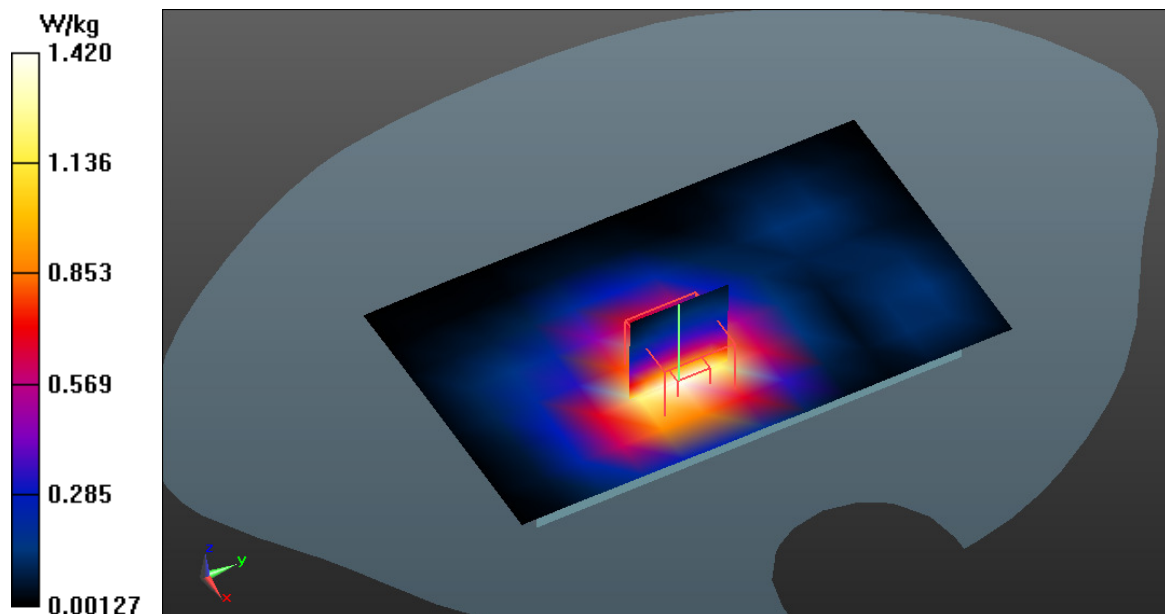
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.42 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 24.014 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.818 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD IV_CH1512_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band IV; Frequency: 1752.4 MHz; Duty Cycle: 1:1
Medium: Muscle 1800 MHz Medium parameters used (interpolated): $f = 1752.4 \text{ MHz}$; $\sigma = 1.539 \text{ S/m}$; $\epsilon_r = 54.407$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

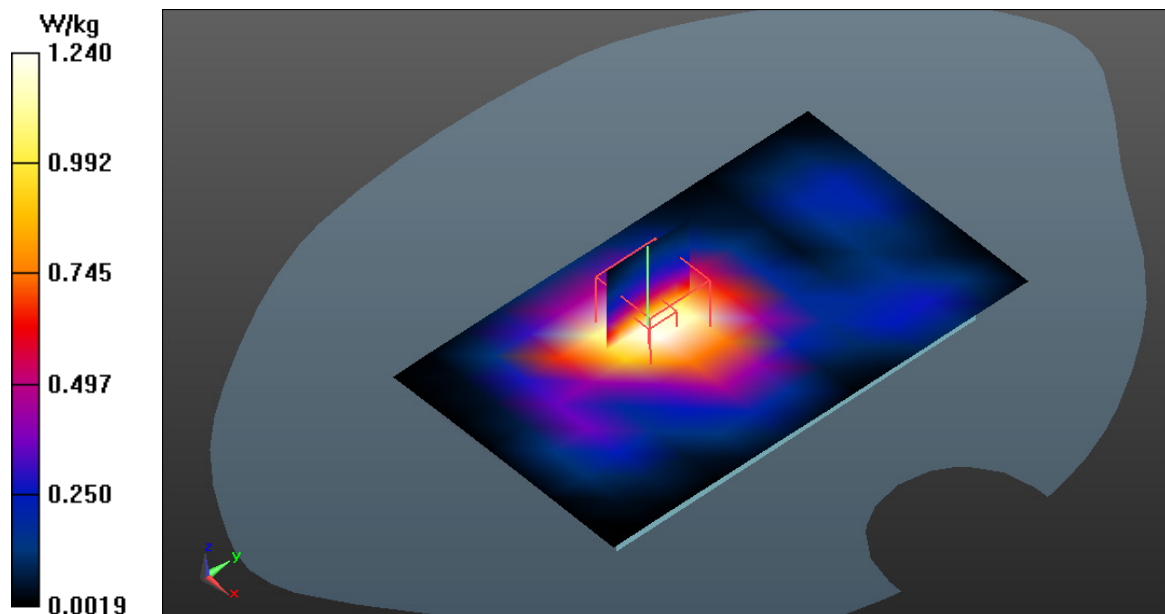
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(4.69, 4.69, 4.69); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 1.24 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.360 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.777 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4133_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 826.6 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 826.6$ MHz; $\sigma = 0.95$ S/m; $\epsilon_r = 55.408$;
 $\rho = 1000$ kg/m³
Phantom section: Flat Section

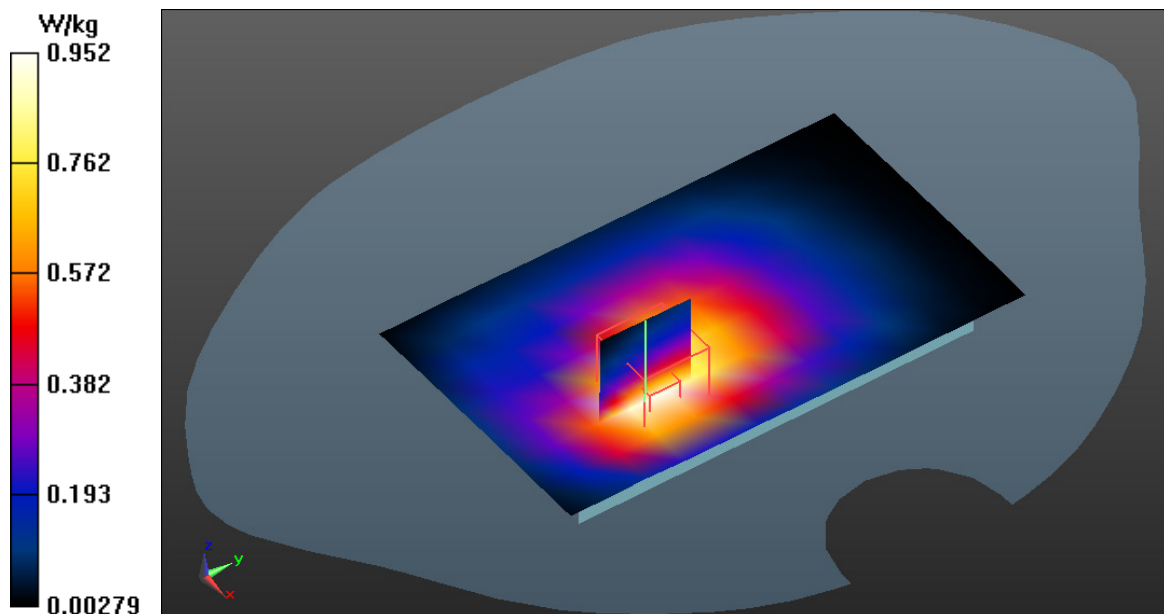
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm
Maximum value of SAR (measured) = 0.952 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 26.325 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.905 W/kg; SAR(10 g) = 0.596 W/kg
Maximum value of SAR (measured) = 0.978 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4133_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 826.6 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 826.6$ MHz; $\sigma = 0.95$ S/m; $\epsilon_r = 55.408$;
 $\rho = 1000$ kg/m³
Phantom section: Flat Section

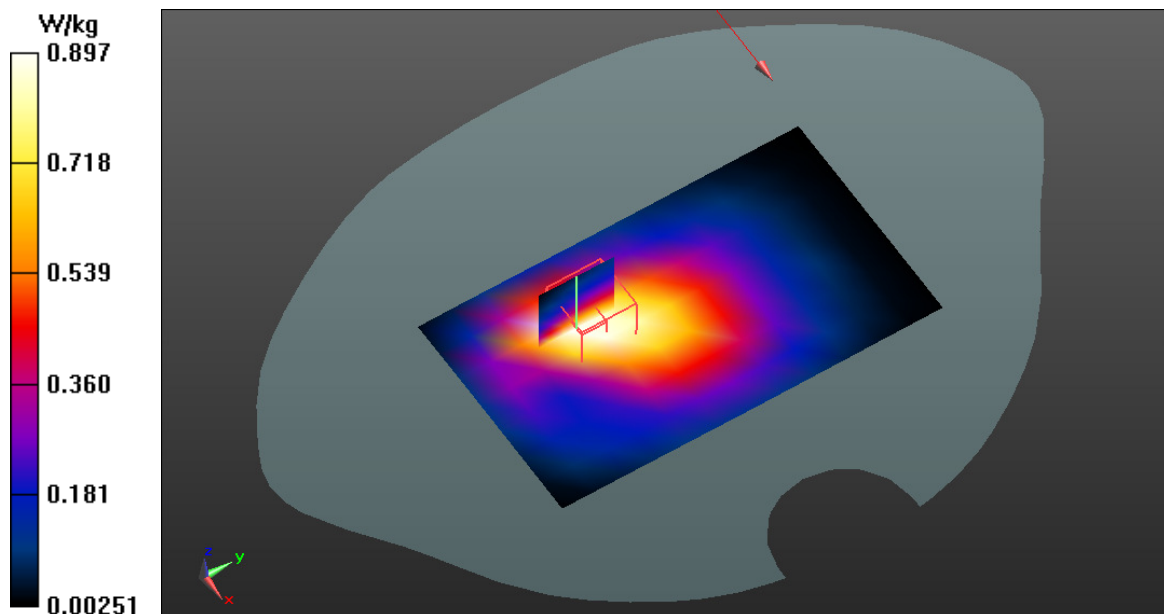
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5$ mm, $dy=12.5$ mm
Maximum value of SAR (measured) = 0.897 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 27.580 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.885 W/kg; SAR(10 g) = 0.581 W/kg
Maximum value of SAR (measured) = 0.967 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4175_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 835 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 55.299$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

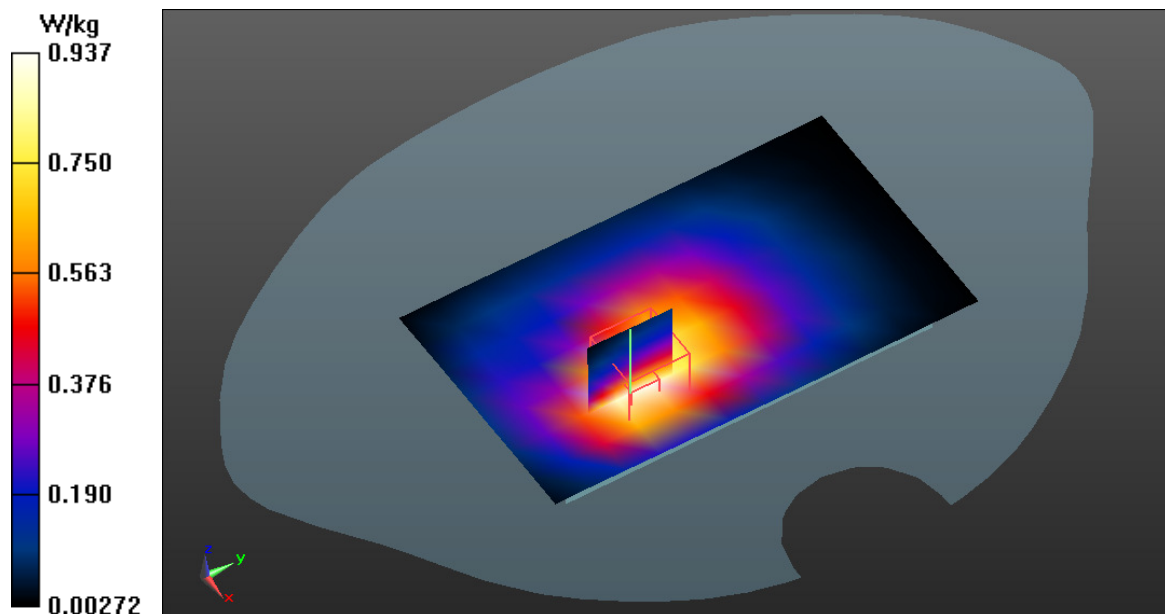
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 0.937 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 26.211 V/m ; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.891 W/kg ; SAR(10 g) = 0.584 W/kg
Maximum value of SAR (measured) = 0.969 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4175_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 835 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 55.299$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

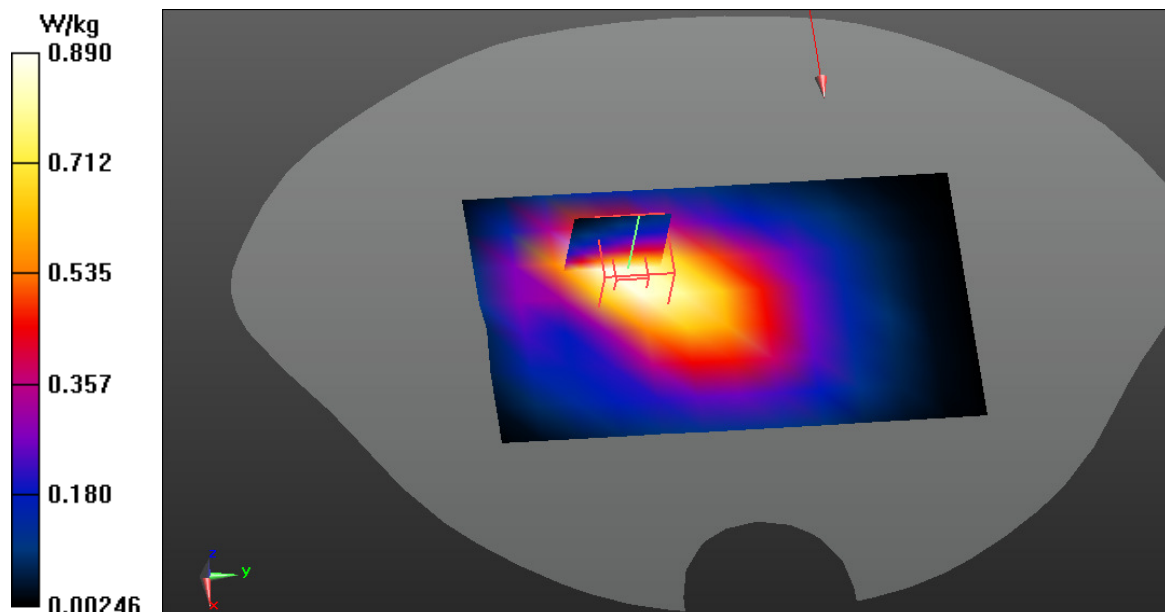
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: $dx=12.5\text{mm}$, $dy=12.5\text{mm}$
Maximum value of SAR (measured) = 0.890 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.223 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.877 W/kg; SAR(10 g) = 0.573 W/kg
Maximum value of SAR (measured) = 0.930 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4232_HSPA_Flat_Back_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 846.4 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 846.4$ MHz; $\sigma = 0.963$ S/m; $\epsilon_r = 55.151$;
 $\rho = 1000$ kg/m³
Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: dx=12.5mm, dy=12.5mm

Maximum value of SAR (measured) = 0.979 W/kg

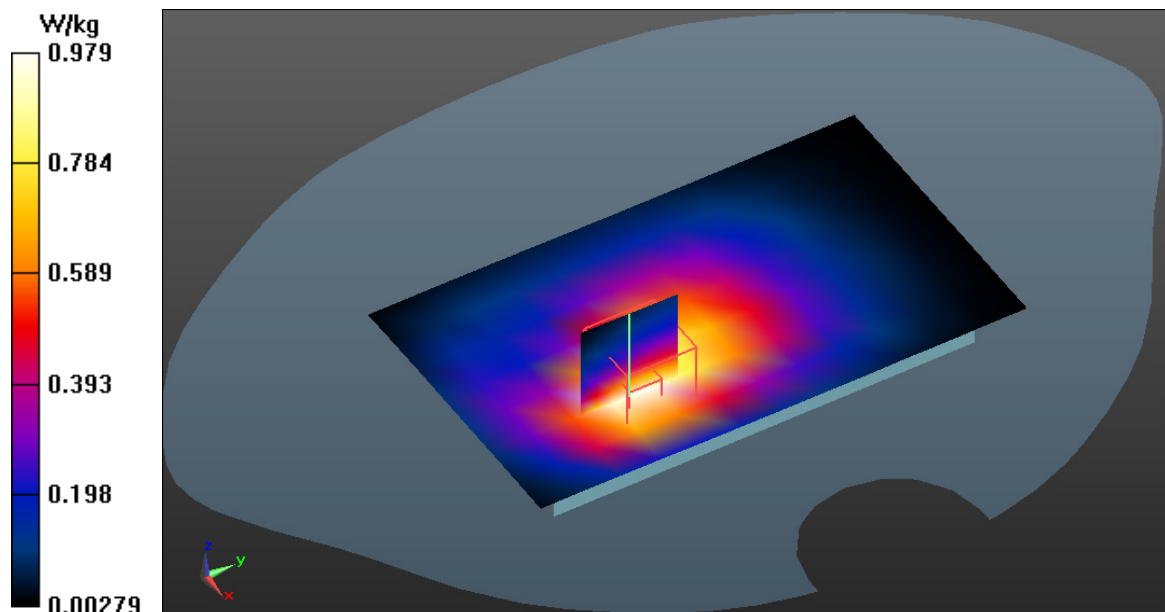
Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.346 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = 0.925 W/kg; SAR(10 g) = 0.601 W/kg

Maximum value of SAR (measured) = 1.00 W/kg



Test Laboratory: Eurofins Product Service GmbH

FDD V_CH4232_HSPA_Flat_Front_5mm

DUT: CardioMessengerSmart3G; Type: Telemonitoring System; Serial: Sample1

Communication System: UID 0 - n/a, UMTS Up Band V; Frequency: 846.4 MHz; Duty Cycle: 1:1
Medium: Muscle 900 MHz Medium parameters used (interpolated): $f = 846.4$ MHz; $\sigma = 0.963$ S/m; $\epsilon_r = 55.151$;
 $\rho = 1000$ kg/m³
Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5.2 Configuration:

- Probe: ET3DV6 - SN1711; ConvF(5.99, 5.99, 5.99); Calibrated: 18.09.2013;
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn522; Calibrated: 11.09.2013
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1217
- Measurement SW: DASY52, Version 52.8 (6); SEMCAD X Version 14.6.9 (7117)

Configuration/CardioMessengerSmart3G/Area Scan (8x13x1): Measurement grid: dx=12.5mm, dy=12.5mm

Maximum value of SAR (measured) = 0.891 W/kg

Configuration/CardioMessengerSmart3G/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.554 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.890 W/kg; SAR(10 g) = 0.578 W/kg

Maximum value of SAR (measured) = 0.971 W/kg

